Terror and Tears in the Labour suit: The Prevalence and Forms of patient Abuse by Health workers during Childbirth in Uganda

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Abstract

Background: Among the factors contributing to the high maternal morbidity and mortality in Uganda is the proportion of pregnant women who do not deliver under skilled supervision. There is paucity of data concerning the magnitude of patient abuse by health workers which is a main factor preventing facility delivery. This study aimed to determine the magnitude of abuse and the forms of abuse the patients in Bushenyi district in Uganda. Methods: In this cross sectional survey, 374 women who had just delivery in the health facilities were interviewed to identify any form of abuse treatment. The independent predictors of patient abuse were analysed at bivariate and multivariate level using binary logistic regression analysis. Results: The prevalence of patient abuse among the respondents was found to be 41.1% (P = 0.013). The commonest form of abuse reported was patient neglect 31.9% (p = 0.000), verbal abuse (29.3 %) and bribery (15.1%). The associated with patient abuse were; patient age 15-25years, prime gravidity and low Health center facility. Conclusions: The prevalence of patient abuses during childbirth very high and detrimental the health system. Close supervision midwives especially in the lower level facilities, as well as keeping the company of the relatives or friends to especially the younger the patients around the labour suite, Community sensitisation and empowerment through health education are suggested.

Keywords: Patient abuse, childbirth, South Western Uganda

Introduction

Each year, over 850 women die during child birth [1–4] and ninety percent of these deaths occur in how income countries [2, 3]. In the recent years, concerted efforts towards maternal survival have made significant stride in reducing maternal mortality due to preventable cause [1,2, 5] in the developed world with the remaining dismal, particularly due to un avoidable circumstances [3, 6]. Despite the in comprehensible contribution to the magnitude of avoidable maternal mortality and morbidity, patient neglect and abuse has historically been a forgotten phenomenon. Unfortunately the relative oversight put to it is multilevel in nature including the policy making level, managerial level and at the implementation level of the health system [2, 6]. Furthermore, the safe motherhood initiative launched over thirty years ago doesn’t pay attention to maternal abuse and neglect [7, 8]. The relative neglect of this health system impairing phenomenon and the failure to implement interventions against it are seen most significantly in sub-Saharan Africa [9]. Here the presumably associated maternal mortality rates are highest and uptake of delivery services lowest [4, 10].

In Uganda the low utilization of health facility delivery service and the resultant maternal mortality and morbidity have been closely linked to the ethical behavior of the health workers and human right issues encountered during practice [5, 6, 11]. It is surprising that, over time, patient neglect and abuse have not been targeted in programs aimed at attending to the health of the pregnant woman in this country. It has been proposed that the reasons behind such an atmosphere lie in myths that it’s impossible to have a successful delivery without the use of excessively strong language and actions towards the mother during labour [9, 12]. Yet, by introducing simple but universal interventions improving care during delivery can become a reality.
Evidence from the recent array of studies [7, 11, 13] has it that many developing countries, Uganda inclusive, are yet to take a stride in the introduction and implementation of interventions and program against maternal abuse and neglect. However the evidence base of data required informing policy makers is still too weak due to paucity of studies on maternal abuse and neglect in this region. Despite increasing recognition of women's health needs in Uganda, little has been done to improve the way primary care physicians handle the pregnant women.

The forms of cultural and gender discrimination associated with patient abuse and neglect are copied or inherited by the health workers right from their communities[14] and training institutions [15] thus they are brought up in the culture and live in it. In the all, just as for other reproductive health issues, paucity of data exists on the influence of patient abuse on the utilization of skilled delivery services in Uganda. It is important, therefore, to understand the specific factors that perpetuate patient abuse in these rural Sub-Saharan African settings, since these may be considerably different from other settings found in the literature [12, 13, 16]. Indeed, most the currently available date doesn’t give statistically significant estimate of the magnitude of this problem. A lot of gaps still exist in the information about the health effects of maternal abuse and its relation with the health seeking behaviors of the mother. The paucity of the linkage between patient abuse and neglect the choice of the delivery service by the patient and the outcomes of the delivery there after, offered the basis for this study.

**Methods**

**Study settings**

The study was conducted in Bushenyi district in S.W Uganda with an estimated population of 487,432 [14]. The district has 29 health units, 23 of which (79%) are public health facilities. There are three general hospitals which provide referral services and comprehensive Emergency Obstetric Care (EmOC). Two health centre IVs which provide basic EmOC and nine health’s centre IIIs which provide delivery services but no EmOC. The rest are health centers with no delivery services. Although 70% of the population lives within 5km radius of a health unit in Bushenyi, only one-third of these health units provide institutional deliveries and other reproductive health services. Most of the population in this district is rural (75%), living on substance agriculture and cattle keeping as the main economic activity. Bushenyi has a high proportion of women attending antenatal care (ANC) at about 91% [17]. However the district has one of the lowest proportions of women delivering under skilled attendance at 52% [14].

**Sampling**

In this cross sectional study a sample size of 374 respondents, determined by Wayne (1987) formula for infinite population proportions was be used. All the health facilities with delivery services in the district were included in the study. The respondents were targeted for interview before they left the health facilities after discharge. Since the health facilities deliver a few patients per day (0-5 patients) all patients discharged from the health facilities following delivery were included in the sample. Of all the eligible women identified for the interviews only 4 (1.5%) refused to participate citing exhaustion and lack of time as the reasons for refusal.

**Data collection**

A pretested structured questionnaire was used to collect data on socio-demographic factors including demographic characteristics, history of abuse or neglect during the delivery, form of abuse, and the circumstance under which the abuse occurred. Research assistants trained on the data collection procedures carried out interviews while one of the principal investigators (AK) played a supervisory role. The data collected included basic personal demographic data of the respondents, basic obstetric history, and perception about the delivery service received during the current delivery and instances of abuse, or neglect during the delivery.
Data analysis

The questionnaires were checked for completeness in the field. The data was entered and analysed using SPSS software version 17. Descriptive statistics were used to analyse the socio-demographic variables of the participants and the prevalence of patient abuse which was expressed in terms of the proportion of the patient abuse during child birth in the health facilities. The outcome variable was patient abuse during childbirth. A two-sided P-value < ±0.05 was considered statistically significant. Crude Odds ratios (COR) with 95% confidence intervals (CI) were used to assess for association during bivariate analysis. All those factors that were found to be significantly associated with patient abuse from bivariate analysis were considered for logistic regression analysis to generate a model to explain patient abuse during childbirth in the health facility. In logistic regression analysis, the backward likelihood ratio method was used to test the model and each of the predictors was assessed for the percent of variance it explained in the model.

Ethical issues

This study was approved by Texila American University School of Public Health and Kampala International University Research and ethics Committee. All the patients who participated gave verbal consent to the interviews.

Results

This study provides a basis for understanding patient abuse and neglect by health workers during child birth in south western Uganda. In the study, we had two working specific objective; to establish the magnitude of patient abuse and to assess the types of abuse commonly inflicted upon the patients delivering in health facilities by health workers in South Western Uganda. Data was collected from 372 respondents using interviewer administered questionnaires. We distributed a total of 376 questionnaires and received back 372 properly filled questionnaires, giving a response rate of 98.9%.

Study participants

The data presented here is the result of analysis of the 372 questionnaires (n=372) uniquely completed in the survey among women who had just delivered in the health facilities at the time of discharge. Of the 372 respondents, 101 (27.0%) had delivered for the first time (parity 1) 241 (64.9%) had parity 2-4 and 30 (8.1%) had the parity 5 and above. About the age of the respondents 181 were in the age group 18- 25 years 121 were 26-35 years and 70 were above 36 and above years. About the facilities they had delivered from 234 (62.2%) had attended PNFP health facility and 138 (37.8%) had attended public facilities. Again 58 (16.2%) had delivered from level III health facilities, 148 (40.5%) had delivered from level IV health facilities and 168 (43.3%) had delivered from level V health facilities.

The prevalence and risk factors for patient abuse during childbirth: Overall, the prevalence of patient abuse among the respondents was found to be 41.1% (P = 0.013). However only 29.4% (p=0.041) of the patients interviewed could report the incidences of abuse first time. In the rest (11.7%), abuse incidences were uncovered after a deep inquiry. Almost all types including physical abuse, verbal abuse, patient neglect, non consensual treatment and financial extortion were mentioned in this study.

Table1 shows adjusted Odds Ratio (OR) with 95% Confidence Intervals (CI) of the association between patient abuse during child birth with a number of factors including; the age of the patient, the parity of the mother and the level of facility they attended.
Table 1: The association (OR, 95% CI) between age, parity, health facility level, health facility type and patient abuse during childbirth. Result of multivariate logistic regression analysis

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>n= 372</th>
<th>COR (95% CI)</th>
<th>AOR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group (years)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18-25</td>
<td>1.73 (1.02-2.92)</td>
<td>1.95 (1.47-2.60)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>26-35</td>
<td>0.72 (0.72-1.23)</td>
<td>0.52 (0.32-0.56)</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>≥36</td>
<td>1 ref</td>
<td>1 ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.22 (1.06-1.33)</td>
<td>2.07 (0.09-1.51)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>2-4</td>
<td>0.19 (0.51-1.01)</td>
<td>0.50 (0.31-1.35)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>≥5</td>
<td>1 ref</td>
<td>1 ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Facility level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td>1.91 (0.02-1.20)</td>
<td>1.68 (0.72-1.45)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Level IV</td>
<td>0.02 (1.43 -2.11)</td>
<td>0.52 (0.49-0.81)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Level V (hospital)</td>
<td>1 ref</td>
<td>1 ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Facility type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>1.51 (1.31-1.72)</td>
<td>1.91 (0.63-1.41)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PNFP</td>
<td>1 ref</td>
<td>1 ref</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COR= crude odds ratio AOR= adjusted odds ratio

There was statistical significant association between the patient being in the age group 15-25 years (AOR 1.95, 95% CI 1.47-2.60), having a parity of one (AOR 1.24, 95% CI 0.09-0.512) and having delivered from a Health center III (AOR 1.68, 95% CI 0.72-1.45). Also having no relative or friend around had statistically significant association with patient abuse (AOR 2.93, 95% CI 0.47-2.90).

However a significantly lower association was seen between patient abuse and women parity of 2-4 (AOR 0.50, 95% CI 0.31-1.35), women in the group 26-35 (AOR 0.698, 95% CI 0.51-0.95). Also delivering in a higher facility level (level IV and V) showed low statistical association with patient abuse.

Graph I: Shows the effect of patient abuse on patient satisfaction with the services received, their ability to seek the same service again and the ability to recommend the service to a friend. In general, of all the patients who reported dissatisfaction with the services received (241), 171 (74.1%, p=0.00) had been abused in one way or another as compared to 70 (25.9 %, p=0.04) who reported satisfaction with the services received. Of all the patients who reported that they can never seek the same service again (117), 93 (79.6%, p=0.03) had been abused as compared to 24 (16.8 %, p=0.01) among those who reported ability to seek the same service.

Graph I: Effect of patient abuse on patient satisfaction, seeking the same service again and the ability to recommend the service to a friend.
Types of abuse inflicted on women during childbirth: As seen in table II below, the commonest form of abuse reported was patient neglect 31.9% (p = 0.000) where the patients were abandoned and left without the assistance of the health works when they needed it. The second most common form of abuse was verbal abuse reported by 29.3 % of the respondents (p = 0.001). This included shouting at the patient, scolding and using unnecessarily strong language.

Table II: Types of abuse experience by the patients in percentage, adjusted Odds Ratio (AOR) and associated p-values (n=372)

<table>
<thead>
<tr>
<th>Abuse (type)</th>
<th>No.</th>
<th>%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical abuse</td>
<td>73</td>
<td>19.7</td>
<td>0.032</td>
</tr>
<tr>
<td>Verbal abuse</td>
<td>109</td>
<td>29.3</td>
<td>0.001</td>
</tr>
<tr>
<td>Patient neglect</td>
<td>118</td>
<td>31.9</td>
<td>0.000</td>
</tr>
<tr>
<td>Non consensual treatment</td>
<td>51</td>
<td>13.8</td>
<td>0.935</td>
</tr>
<tr>
<td>Denial of pain relief</td>
<td>50</td>
<td>13.5</td>
<td>0.063</td>
</tr>
<tr>
<td>Asked to pay bribe</td>
<td>56</td>
<td>15.1</td>
<td>0.021</td>
</tr>
</tbody>
</table>

A significant number of the patients surveyed reported having been charged none official fees by the health workers 15.1%, (p =0.021) before any services could be provided to them. The amount charged depended on the discretion of the health worker but it ranged from Ugandan shilling equivalent of 2 US dollars to as much as 40 US dollars if the mother needed operative delivery.

Denial of pain relief was experience by 13.5% (p = 0.063) of the patients. Physical abuse in the form of boxing, slapping, caning, pinching pushing was experienced by 19.7% (p = 0.032) of the patients delivering in the surveyed health facilities. And non consensual treatment reported by13.8% (p = 0.935). None of the respondents reported any incidence of sexual abuse in this study.

Discussion

The results of this study indicate a high prevalence of patient abuse during childbirth in south-western Uganda where it is significantly associated with patient factors as well as health facility factor. This study was part of a larger project of four studies aimed at establishing ways of eliminating patient abuse and improving patient care during childbirth in South Western Uganda. In the long run the study will contribute towards improving the uptake of supervised delivery services in the health facilities in Uganda with the ultimate the reduction of maternal and neonatal mortality and morbidity basing on the well known fact that health workers behavior towards patients is a key ingredient that shape the picture of the health system in the eyes of the service seekers. The studies are designed to provide information, which could be used by policy makers and implementers to design interventions to reduce patient abuse in the maternity setting. The results may not be generalized to the entire country but they provide valid insights into the prevalence of patient abuse during child birth, the forms of abuse experienced by the patients and the factors associated with the abuse that can be extrapolated to other parts of the country where such data is missing.

Inappropriate patient handling was identified as a possible cause for the failure to seek supervised delivery services or a delay in taking a decision to seek care resulting into complications of child birth. The study further shows a strong association between patient abuse and the decision making on location of birth place, the ability of the patient to ever come back to the health facility for the services and ability to recommend the services to friends. Moreover it has been reported that only 32% of women in this delivered in health care facilities [14].
Prevalence of patient abuse during childbirth

The prevalence of patient abuse of 41.1% observed in our study is high compared to what other studies [4, 12, 13] which have reported prevalence rates of between 9.1% - 27%. The explanation for this difference can be viewed in terms of the settings in which the study was conducted. Most of the studies we found in literature that tried to measure the prevalence of patient abuse were conducted in American and European settings, quite different from what is expected of an African setting. Unfortunately we did not come across any comparative study in the African setting that tried to measure the magnitude of patient abuse. In this study women across all spheres including rural and semi-urban residents expressed history of having been abused to some degree. This finding was divergent from Mvo et al (2005) who described abuse among the rural residents in South Africa as compared to the urban dwellers [6]. They attributed the difference to the appearance and the kemptiness of the patients as they reported to hospital which was dissimilar in the two groups of patients.

The young patients, age group 15-25 years reported more incidences of having been abused. This is a very unfortunate finding as this particular age group is comprised of very sensitive people who need to be handled with at most care. More over they are more prone to birth related complications [17] therefore scarcing them away from receiving supervised delivery is time bomb for any health system. Maine (2005) reported similar finding among women southern Malawi [18]. They described adolescent patient being scolded for coming to a contraceptive clinic and most times being denied explanation of how to use the medicines given to them. The lower health facilities and the public health facilities were more commonly associated with patient abuse. In the context of this study, this could be a factor lack of close supervision of the health worker in the facilities where they are left on their own with very little or no supervision. The ‘lonely feeling of out of place’ may lead the health work to doing anything to their patients, probably out of will but can also be out of frustration. In fact most of the health facilities surveyed have lower level health workers with little experience and lower motivation levels.

In all, it was often difficult for the respondents to identify what abuse was and whether they have been abused or not. It often took the interviewer time to make deep inquiries in order to uncover the incidences of patient abuse. As Kyamuhendo (2010) pointed out, there is no ‘clear cut’ single dependable yard stick for identification of patient abuse [11]. Apparently in the rural African context, in which this study was conducted, most times patients take certain abusive actions of the health worker as normal to the health system. Depending on the existing situation, patients have to get satisfied with any form of treatment so long as they obtain positive results “a healthy baby”. To them the end justifies the means, abused or not. As asserted by Lehmann (2013) most of the patients in the low-income countries hardly know their rights especially when it comes to seeking health care services [19].

Given such a high magnitude of abusive behaviors and mistreatment exhibited to patients seeking supervised delivery in the health facilities, it would be inappropriate to expect the proportion of pregnant mothers seeking supervised to increase. The marked disparity in prevalence of skilled supervised delivery the developed countries (up to 100% in UK and Canada) and the low income countries (37% in Uganda) is partly attributable to the way patients are handled in the health facilities [14, 20]. Musisi et al. (2008) study found that lack of compassionate treatment was among the most common barriers to health facility deliveries that drive mothers to give birth in their communities [21]. In this study a significant proportion of patients (33.7%) made it categorically clear that they can never come back to deliver in the same health system and 36.1% would never refer friends to such an abusive health system. The implication of this is that the pregnant women are left with very little choices other than delivering under unsupervised condition in their communities. According Kabakyenga (2012) women in low-income countries have several options for location of childbirth depending on their perception on how they will be treated including home delivery, which may be solitary or assisted by unskilled assistants, and health facility delivery which can either be in a public or private institution [17]. Neema (2002) in her study conducted the
same region (south-western Uganda) also reported that women find themselves in the dilemma regarding the choice for location of birth as they are torn between the dangers of delivering at home and the disrespectful care in the healthcare facility[22]. The results from our study indicate that women who, solitarily, reported to the health facility to give birth are more likely to be abused by the birth attendants than those who were accompanied by others (partner, friends, and relatives). This finding supports the results from study Pombe (2010) where women reported preference for home/solitary confinement during childbirth if they had no one to accompany them to the health facility in order to protect their own integrity [23]. Moreover, in low-income countries home births are inherently risky, should a complication such as prolonged labour occur then a possibility of adverse outcome is highly likely [14].

In Ghana, Kuffo et al. (2009) found that poor quality of care and bizarre labour suit experiences adversely affect the reputation of the public health care system with the resultant high risk community childbirths [9]. The assessment of the quality of maternity services received by the patients in relation to patient abuse in the labour suite was the focus of a study by Thaddeus (2004) Consistent with the current study, they found that the attitude of the midwives towards patients, availability of delivery equipment and supplies were most influential in the choice of where a mother goes for delivery [24]. Improving these and related parameters would lead to a consequential raise of facility delivery by 55-75%, which would overturn maternal mortality in this region by over 50% [2, 25].

**Types of abuse**

The result from our study indicate that there are various types of abuse experienced by the women in this region included verbal abuse, discrimination, abandonment, non consensual treatment, financial extortion and physical abuse. Similar forms were reported by Shones et al. (2005) in their study conducted in Morogoro Tanzania [20]. However in their study incidence of physical abuse was reported to be very scarce.

**Physical abuse:** In the current study, physical abuse taking the form of boxing, slapping, pinching, pushing and forced treatment or procedures emerged strongly with some patients showing signs such as bruises and swellings at the time of interview. This shows the extremes of the forms of mistreatment occurred in this community. Von (2000) described how women would get hit or beaten during labor if they yelled too much or “talked back” to the midwives [26]. They reported that this behavior was witnessed by many of their responds being inflicted to others patients. Other physical actions such as being forced to deliver while lying down with the knees pulled “up”, and other uncomfortable and frightening positions were also commonly reported. Similar to other dimensions of abuse, physical abuse is often inflicted in the instance of a women expressing their preferences as opposed to a “modern” mold have been reported [1, 2, 27, 28].

**Verbal abuse:** Mvo et al. found verbal abuse in the form of criticism levied against the delivering mothers to be very common [6]. They found that the verbal abuse entailed outright shouting or harsh remarks towards the patient. According to their finding, verbal abuse was discriminatory in nature, in that the women who were not following the “rules” or were not presenting themselves as “modern women” were more likely to be berated. In the current study we found this form of abuse to be statistically significantly related to the ‘young’ age of the patient and the parity of the patient involved. Zhang et al. (2011) reported patients being scolded for not pushing hard enough during the second stage of labour. Similar reports were given many respondents in the current study [27]. Although this action is intended to encourage the mother to put in more effort and push harder for the baby to be delivered faster, it doesn’t call for such extreme degrees of verbal flexion that is tantamount to patient abuse. The midwives are expected to have learnt better techniques of encouraging the woman to push out the baby. Similar to our findings, Jewkes et al. (2005) described more common criticisms against the patients in labour including; critiques of a woman’s economic status such as wearing old or dirty clothes, critiques of her use of traditional medications and her history of antenatal attendance [3].
**Feeling ignored or neglected:** Mwesigye (2008) described how women expressed fear of arriving at a facility and being ignored or delivering without the assistance of the midwife [27]. They described an occasion during a night delivery, where the midwife kept at her home within the health facility, but was unwilling or unable to come and deliver the mother in the labour suit.

Goergen et al. (2004) narrated how a group of health providers were in their nurses’ room conversing and taking tea while a mother in labour was yelling helplessly in the labour suit and yet none of them was willing to come to her rescue [10]. In Malawi a mother almost lost her baby when she fell out without the attention of the midwife [29]. The baby was save when the nurse ran and caught the baby as she landed to the ground. In South African pregnant women admitted to the same ward were found assisting each other to deliver in the absence of a midwife [29, 30].

**Soliciting of bribes from patients:** D’Oliveira et al. (2005) described situations where mothers were expected to give material items to the midwives in the facilities before they re-assisted to delivery [28]. In some situations, they said, the women were asked to pay a “thank you” to providers following a delivery. This of course was none official and against the will of the patient. Eastley (2007) found that women who had delivered out of hospital in their previous deliveries were asked to pay a fine for home delivery before being attended to [13].

Several papers have reported in official charges level to patients inform of bribes (referred to as a ‘kick’) especially in public facilities where payment was abolished in this country [30]. In very busy hospitals where overcrowding and floor cases are the order of the day, patients are charged none official fees for the beds or else they stay among the floor cases [31]. Most times it’s not because the health workers are under remunerated but more of a moral issue drives corruption among health workers. Moreover they ask for bribes from rural poor women well knowing how deeply they entrapped in poverty and insufficient social amenities. Some of the health workers are well to do to persons only craving for undue happiness and wanting to be classy. The perpetual habit is driven by extravagancy and expenditure beyond their means to ripping where they never saw. Corruption has been described to be deeply entrenched into the moral fabrics of the health system [32].

**Discriminatory treatment:** Shanon et al. (2005) described how certain sectors of women could more easily access supplies or services at facilities than others [20]. They found that women of a higher social status, those who knew someone working within the facility or were somehow, for unknown reasons, favored by providers. In their study they described how nurses could discriminatorily decide - “upon seeing a woman coming to the facility or not” – “whether they would provide prompt services to her or not. This form of retrogressive behaviors’ such as basing on religion or tribes in service delivery, a form of persistent apartheid, was found to be rare in this region.

Other studies including [31, 32] have attached the discrimination of mothers to their failure to pay the bribe, dirtiness, poorly dressed up or a look like rural women. Also mothers are discriminated according to their political and social background [31].

**Recommendation for future research:** In-depth studies to investigate into the reasons why health workers abuse their patients and the circumstance under which the abuses occur need to be undertaken. Furthermore an extensive quantitative study at a national scale is needed to uncover regional differences in the extent of abusive patient care.

**Conclusions and recommendations**

To achieve a reduction of maternal morbidity and mortality must start with a consented effort to reduce the proportion of women delivering in the communities without skilled attendance. A conducive delivery environment can only be achieved with compassionate nursing care to all mothers seeking the care of health workers. Patient abuse of any form is detrimental as lenders the health system unpopular to the communities and reduces service utilization with adverse consequences to the patients.
Close supervision midwives while caring for the patients in labour is essential to reduce the incidences of patient abuse as well as keeping the company of the relatives or friends to the patients around the labour suite. Community mobilisation and empowerment through health education using the existing structure like the Community Health Workers to ensure awareness of their fundamental rights is highly recommended. Capacity building through human right sensitization for both patients and health workers is vital at all facilities levels. The patients should be made aware of where to seek redress in case of abuse. A multi-sectoral approach to improve the literacy of the women poverty reduction is essential to reduce gender based violence against the pregnant women which is central in improving the uptake of maternal services.

References


Prevalence of Smear Positive Tuberculosis among Patient Attending, National Hospital Abuja, Federal Capital Territory, Nigeria

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Abstract

Objective: This study was planned to determine the prevalence of smear positive pulmonary TB among patients receiving care at a tertiary reference Hospital - National Hospital Abuja, Federal Capital Territory (FCT), Nigeria.

Background: With an estimated 9.4 million new cases globally, tuberculosis (TB) continues to be a major public health concern. Eighty percent of all cases worldwide occur in 22 high-burdens, mainly resource-poor settings. This devastating impact of tuberculosis on vulnerable populations is also driven by its deadly synergy with HIV. Therefore, building capacity and enhancing universal access to rapid and accurate laboratory diagnostics are necessary to control TB and HIV-TB co-infections in resource-limited countries. In low income countries (Nigeria inclusive), Ziehl-Neelsen sputum smear microscopy is the only cost-effective tool for diagnosis and monitoring of patients on treatment.

There is dearth of data on the prevalence of pulmonary tuberculosis (PTB) among patient attendees from individual Institutions and Health Care Facilities performing sputum smear microscopy in Nigeria. This retrospective study will analyze sputum smear microscopy results among pulmonary TB suspected patients presenting to National Hospital Abuja, Federal Capital Territory (FCT), Nigeria. Sputum smear microscopy for Acid Fast Bacilli (AFB) results of new suspected pulmonary TB (Diagnosis) patients and their demographic data comprising age and sex recorded from January 2010 to December 2014 were retrieved from the TB Laboratory Register of the Medical Microbiology department and analyzed.

Methods: This hospital based retrospective study analyzed sputum smear microscopy results among pulmonary TB suspected patients presenting to the National Hospital Abuja, Federal Capital Territory, Nigeria. Sputum smear microscopy for Acid Fast Bacilli (AFB) results of new suspected pulmonary TB (Diagnosis) patients and their demographic data comprising age and sex recorded from January 2010 to December 2013 were retrieved from the TB Laboratory Register of the Medical Microbiology department and analyzed. Data processing and statistical analysis were performed using SPSS software (Windows version 16.0). The results were expressed as percentage, with significance at 5%.

Results: The overall prevalence of sputum smear positive cases were 17.3% (63 of 364) and most of the positive patients were within the age range 15 – 44 years. The highest percentage of TB was seen in the age group of 15 - 24 years compared with the lowest percentages in the age group below 14 years and above 45 years. A total of 63 (17.3%) suspects were found to have at least one positive. Of these, 56 (88.9% of those with one or more positive smears and 92% of those who fulfilled the case definition) were detected from the first specimen and 7 (11.1%) were positive on the second specimen but not the first. The third specimen did not have any additional diagnostic value for the detection of AFB.

Conclusion: The prevalence of sputum smear positive cases of 18.3% increases with age up to the age 44 years. Our result show that examining two sputa smears was sufficient for the detection of AFB in our laboratory. Further research involving different laboratories from all of the six geo-political groups in Nigeria is needed to reassess these findings.

Introduction

Tuberculosis (TB) still remains a major global health problem. It causes serious ill-health among millions of people each year globally and ranks as the second leading cause of death from an infectious disease worldwide, after the human immunodeficiency virus (HIV). There
were 8.6 million new TB cases as at 2012 and 1.3 million TB deaths (just under 1.0 million among HIV-negative people and 0.3 million HIV-associated TB deaths). In 2012, there were an estimated 2.9 million cases and 410,000 TB deaths among women, as well as an estimated 530,000 cases and 74,000 deaths among children.

At least one-third of the 35.3 million people living with HIV worldwide are infected with latent TB. Persons co-infected with TB and HIV are 29.6 times (27.1 – 32.1) more likely to develop active TB disease than persons without HIV. TB is the most common presenting illness among people living with HIV, including those who are taking antiretroviral treatment. There were an estimated 1.1 million HIV positive new TB cases globally in 2012. Around 75% of these people live in sub-Saharan Africa (Nigeria inclusive). TB is the leading cause of death among people living with HIV, accounting for one in five HIV-related deaths. In 2012, some 320,000 people died of HIV-associated TB. People living with HIV are facing emerging threats of drug-resistant TB such as multi-drug resistant (MDR-TB) and extensively drug resistant TB (XDR-TB) ².

Tuberculosis bacteriology is one of the fundamental aspects of a national tuberculosis control programme and a key component of the DOTS strategy, yet the tuberculosis laboratory service is often the most neglected component of these programmes⁵. Despite recent advances in mycobacteriology, most developing countries still rely on the sputum examination in making a diagnosis of pulmonary TB and in monitoring of patients’ progress under anti-TB treatment⁷.

The use of smear microscopy in patients suspected of tuberculosis presenting to health services is of great value in case detection and in reducing the spread of the infection throughout the population by treatment of such cases. Sputum smear positive patients with active respiratory disease transmit the bacilli to other persons via droplets⁶. Left undetected and untreated, each person with active TB disease will infect on average between 10 and 15 people every year ². Early detection and treatment in other to reduce the transmission within communities are therefore essential for an effective control of the disease⁷.

Nigeria ranks 13th among the 22 high-burden TB countries in the world². WHO estimates that 90,305 new cases of all forms of TB occurred in Nigeria as at 2012. There were an estimated 161,000 prevalent cases of TB in 2012. 97,853 TB cases were notified in 2012 with 52,901 (59%) cases as new smear positives, and a case detection rate of 51%. Also, there is estimated range of 1800-3400 MDR-TB cases among notified pulmonary TB cases in Nigeria as at the end of 2012. The main goal of Nigeria’s TB program is to halve the TB prevalence and death rates by 2015⁴.

Therefore, the aim of this study was to evaluate the prevalence of smear positive pulmonary TB among patients at the National Hospital Abuja, a tertiary health facility located in Federal Capital Territory (FCT), Nigeria. In addition, some aspects of the performance of the pulmonary TB diagnosis are equally discussed.

Moreover there is limited independent data from institutions and health care facilities enumerating TB case detection performance of such institutions to support the data from the National TB Program (NTP). This study was therefore aimed at assessing and evaluating the prevalence of new smear-positive pulmonary tuberculosis diagnosed among suspected persons presenting at the National Hospital Abuja from January 2010 to December 2013.

**Methodology**

**Study design and site**

This hospital-based retrospective study was conducted at the National Hospital Abuja (NHA) and comprised of review of available data from January 2010 to December 2013. NHA is a 280-bed tertiary hospital, located in the Central Business District of the Federal Capital Territory, with state-of-the-art facilities for both clinical and Laboratory components. It used to serve as the final tertiary health care referral centre for the entire country and other neighbouring countries in the West African sub-region until recently when some selected teaching hospitals within and outside Nigeria was upgraded to its level in terms of equipment
and manpower support. The Medical Microbiology and Parasitology department of the NHA received an average of 25 sets of sputum samples per week from individual clients, both from inpatients and outpatients departments.

**Data extraction**

Demographic data comprising age, sex and results for Ziehl-Neelsen stained sputum smear microscopy for Acid Fast Bacilli (AFB) of all (1011) recorded cases from January 2010 to December 2013 were retrieved from the TB Laboratory Register of the National Hospital Abuja, Medical Microbiology Laboratory. From the recorded data information about patients for whom diagnosis has been requested for the first time were retrieved/recorded (using a standardized data collection form) and these were classified as new suspected TB. Repeat cases and patients requesting follow-up test were excluded from the analysis.

**Case definition**

In this retrospective study, a case of pulmonary TB was classified as positive (confirmed case of PTB) if at least one out of the two/three smears from the two/three sputum specimen received was AFB positive and quantified as being scanty, 1+, 2+ and 3+ AFB present. New patients for the purposes of this study were defined as patients who were not on TB treatment.

In this study, all patients having symptoms suggestive of pulmonary tuberculosis (cough for >3 weeks, chest pain, low-grade fever, night sweats) are routinely instructed to submit three early morning sputum samples for the detection of acid-fast bacilli (AFB) and Ziehl-Neelsen or Kinyoun technique was performed on each specimen in compliance with standard bacteriological procedure according to WHO guidelines. Laboratory personnel process three sputum samples for all suspects irrespective of the number of positive smears, as only the physician is allowed to make the decision to start treatment. Patients are considered smear positive if they have at least two smear-positive specimens. Laboratory personnel keep all smear positive slides and an equal number of smear negatives for quality control.

**Data analysis**

Individual patients who contributed fewer than three sputum AFB specimens were excluded from the analysis. One hundred and forty seven files did not satisfy entry criteria due to incomplete information. Data processing and statistical analysis were performed using SPSS software (Windows version 16.0). The results were expressed as percentage, with significance at 5%.

**Results**

A retrospective study of 864 suspects fulfilling all the set inclusion criteria were studied over the 4-years period for AFB smear microscopy analyses; the analysis made up of 506 (58.6%) male and 358 (41.4%) females. the age ranges was 5 - 79 years with a mean of 33.6 years (Table 1).

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 15</td>
<td>70 (8.1)</td>
<td>41 (4.7)</td>
<td>111 (12.8)</td>
</tr>
<tr>
<td>16 - 25</td>
<td>102 (11.8)</td>
<td>98 (11.4)</td>
<td>200 (23.2)</td>
</tr>
<tr>
<td>26 - 35</td>
<td>117 (13.5)</td>
<td>61 (7.1)</td>
<td>178 (20.6)</td>
</tr>
<tr>
<td>36 - 45</td>
<td>83 (9.6)</td>
<td>55 (6.4)</td>
<td>138 (16.0)</td>
</tr>
<tr>
<td>46 - 55</td>
<td>51 (5.9)</td>
<td>48 (5.5)</td>
<td>99 (11.4)</td>
</tr>
<tr>
<td>56 - 65</td>
<td>35 (4.1)</td>
<td>36 (4.2)</td>
<td>71 (8.3)</td>
</tr>
<tr>
<td>&gt;=66</td>
<td>48 (5.6)</td>
<td>18 (2.1)</td>
<td>66 (7.7)</td>
</tr>
<tr>
<td>Total</td>
<td>506 (58.6)</td>
<td>358 (41.4)</td>
<td>864 (100)</td>
</tr>
</tbody>
</table>

Table 1: Age and sex distribution of study patients
The overall prevalence of sputum smear positive cases were 18.3% (157 of 864) and most of the positive patients were within the age range 16 – 45 years (12.9%). The highest percentage of TB was seen in the age group of 16 - 25 years (5.6%) compared with the lowest percentages in the age group below 15 years and above 46 years (Table 2).

<table>
<thead>
<tr>
<th>Age Group (Year)</th>
<th>Number tested</th>
<th>Sputum Positive (%)</th>
<th>Sputum Negative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 15</td>
<td>111 (12.8)</td>
<td>11 (1.3)</td>
<td>100 (11.5)</td>
</tr>
<tr>
<td>16 - 25</td>
<td>200 (23.2)</td>
<td>48 (5.6)</td>
<td>152 (17.6)</td>
</tr>
<tr>
<td>26 - 35</td>
<td>178 (20.6)</td>
<td>35 (4.1)</td>
<td>143 (16.5)</td>
</tr>
<tr>
<td>36 - 45</td>
<td>138 (16.0)</td>
<td>28 (3.2)</td>
<td>111 (12.8)</td>
</tr>
<tr>
<td>46 - 55</td>
<td>99 (11.4)</td>
<td>18 (2.1)</td>
<td>81 (9.3)</td>
</tr>
<tr>
<td>56 - 65</td>
<td>71 (8.3)</td>
<td>12 (1.4)</td>
<td>59 (6.9)</td>
</tr>
<tr>
<td>&gt;= 66</td>
<td>66 (7.7)</td>
<td>5 (0.6)</td>
<td>61 (7.1)</td>
</tr>
<tr>
<td>Total</td>
<td>864 (100)</td>
<td>157 (18.3)</td>
<td>707 (81.7)</td>
</tr>
</tbody>
</table>

The prevalence rates of smear-positive pulmonary TB for 2010, 2011, 2012 and 2013 were 19.8% and 18.5%, 18.4% and 16.0% respectively (Table 3). A total of 157 (18.3%) suspects were found to have at least one positive smear and 154 (18%) fulfilled the case definition (at least two positive smears). Of these, 131 (83.4 of those with one or more positive smears and 85.1% of those who fulfilled the case definition) were detected from the first specimen and 26 (16.6) were positive on the second specimen but not the first.

The third specimen did not have any additional diagnostic value for the detection of AFB as shown in Table 3.

<table>
<thead>
<tr>
<th>Year</th>
<th>At least two positive, N (%)</th>
<th>At least one positive N (%)</th>
<th>PXX N (%)</th>
<th>NPX N (%)</th>
<th>NNP N (%)</th>
<th>Total with three results</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>44 (19.4)</td>
<td>45 (19.8)</td>
<td>37 (82.2)</td>
<td>8 (17.8)</td>
<td>-</td>
<td>227</td>
</tr>
<tr>
<td>2011</td>
<td>40 (18.0)</td>
<td>41 (18.5)</td>
<td>34 (82.9)</td>
<td>7 (17.1)</td>
<td>-</td>
<td>222</td>
</tr>
<tr>
<td>2012</td>
<td>36 (18.4)</td>
<td>36 (18.4)</td>
<td>30 (83.3)</td>
<td>6 (16.7)</td>
<td>-</td>
<td>196</td>
</tr>
<tr>
<td>2013</td>
<td>34 (15.5)</td>
<td>35 (16.0)</td>
<td>30 (85.7)</td>
<td>5 (14.3)</td>
<td>-</td>
<td>219</td>
</tr>
<tr>
<td>Total (All)</td>
<td>154 (18)</td>
<td>157 (18.3)</td>
<td>131 (83.4)</td>
<td>26 (16.6)</td>
<td>-</td>
<td>864</td>
</tr>
</tbody>
</table>

Discussion

TB is a global issue and is a great concern in Nigeria. The main requirement for TB control is the rapid and accurate identification of infected individuals. For the detection of TB, microscopy examination of sputum still remains the first step and is an insensitive tool in providing quick information to the clinician in this setting.

There have been few reports of the prevalence of sputum smear-positive pulmonary TB in Nigeria. The present study, which employed a retrospective laboratory-based study, provided unique information on the prevalence of TB in suspect patients in the developing community.

The study observed improvement in reported case activity among suspected individual patients in a year-on-year basis with steady declines in positivity rates. The impact of initiated treatment plans and support packages afforded to patients burdened with TB could have led to the effective management of cases and improvements in living and social conditions of the people thereby leading to a reduction in prevalence rates and declines in risk of transmission from infected individuals. Over time, the social and living conditions of indigenes have improved tremendously with improvement in diet and environmental hygiene. The resultant decrease in overcrowding in homes as a result of social development could have impacted
greatly on the degree of exposure, reduction in the risk of transmission and susceptibility to infection in exposed persons.\textsuperscript{11}

In the present study, our finding with the overall prevalence of sputum smear-positive of 18.3\% is in agreement with some studies that showed different rates ranging from 12 to 20\% \textsuperscript{12; 13}. However, higher rates of sputum smear-positive cases have been reported in some studies carried out in developing countries.

In studies from Ibadan, Nigeria, \textsuperscript{14; 15} found high percentage of positive smear cases in 30 and 57\% respectively. High rates of positive smear cases have been also reported by other many authors in their studies carried out in African regions \textsuperscript{16; 17}. These variations in the rate could be related to systematic differences in the various population samples. One of the reasons could be the advent of HIV/AIDS which has been shown to be associated with the increase of the prevalence of pulmonary tuberculosis in some countries with high incidence of HIV infection.

This study shows that, there was a high rate of smear positive cases in the 16 to 45-year-old group. Previous studies have also reported the highest rate of smear positive tuberculosis cases in this age group \textsuperscript{18}. This might be as a result of the fact that individuals of this age in their life tend to be more active and are more likely to interact with other people than the elderly and the very young.

In the present study, we tried to assess the contribution of each sputum specimen collected for the detection of AFB by microscopy in our laboratory. \textit{M. tuberculosis} was detected from the first smear specimen with relatively high rate as shown in Table 3, with a small proportion being detected from the second specimen. It is obvious that for the overwhelming majorities (100\%) of patients from whom three smear specimen were assessed, the first and the second specimen were proved to be diagnostic.

The third specimen was of no significant for microscopic examination in smear-negative patients. The analysis of the data generated for this study shows that under routine conditions, evaluating TB suspects with two sputum smears was as effective as with three sputum smears and is followed with less laboratory work and thus, reductions in the cost related to the TB diagnosis processes. Furthermore, this strategy could leave more time for the examination of each slide.

Many recently published reports have shown results similar to the observation in the present study \textsuperscript{19; 9}. In a 4-year retrospective study in Turkey, it was found out that the collection of two sputum specimens was almost always adequate to make a diagnosis (100\%), irrespective of the quality of the specimen obtained \textsuperscript{20}.

In another 5-year retrospective study in New Jersey, it was found that the majority of patients whose AFB smears were negative and for whom TB isolation was discontinued were identified with the first sputum AFB smear \textsuperscript{21}. Another author reviewed 4 years’ worth of data at the University of North Carolina and concluded that “modifying the smear policy formulation from three to two negative smears would have resulted in no increased risk of spreading TB and would decrease the number of days patients are unnecessarily placed under airborne precautions” in their institution \textsuperscript{22}. The findings from this study and those mentioned above raise the question of whether three sputum AFB smears are necessary before discontinuing TB isolation. Again, given limited resource in our setting, it is mandatory to investigate strategies to maximise the detection of cases further pointing the impracticality of the current recommendations in routine clinical practice.

\textbf{Conclusion and recommendation}

The findings from this study shows an indication of remarkable improvement in the case detection efforts in the hospital which could possibly have resulted in the steady decline of positivity rates. Such gains made can further be enhanced by creating effective help-seeking environments within the communities and the hospital, improving diagnostic and health systems efficiency.
The overall prevalence of sputum smear positive cases of 18.3% with the most vulnerable amongst the age ranges 16 - 45. Although the contribution of each sputum specimen for the detection of AFB was not evaluated in this study directly, the result here show that examining two sputa smears was sufficient for the detection of AFB in our laboratory. Further research involving different laboratories from across the six geo-political zones of Nigeria is needed to reassess these findings.

Furthermore, to minimize delays in initiating effective chemotherapy, intensified case-finding activities should be directed towards high-risk communities and age-specific groups so as to increase awareness of typical symptoms of TB disease.

References

Acknowledgement

Special appreciation goes to the Hospital management, Head of Department (HOD), the Chief Medical Laboratory Scientist (CMLS) and the entire staffs of Department of Medical Microbiology and Parasitology, National Hospital Abuja were I was formerly employed, for granting me access to the data for this study.
Knowledge, Attitude and Practice (KAP) Study on Contraceptive Prevalence among Health Care Providers

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Abstract

Objective: To assess the knowledge, attitude and practices of contraceptives among health care providers.

Methodology: A cross sectional study was conducted from Feb 2015 to January 2016 on health care providers of public Hospitals in Lahore. A total of 216 participants were selected who has 2 or more children and lies at the age of 20 above. Data was collected on a self-developed close ended questionnaire. Responses were analyzed on Statistical Package of social Sciences using descriptive statistics.

Results: Mean age 31-40 years (50 %) had secondary school certificate, 86 (39.8%) Nurse Midwife, 190 (88%) were having two children 94(43.5%). Regarding the knowledge and awareness about contraceptives 212 (98.1%) respondents had knowledge about contraceptives and 172 (79.1%) got the knowledge from professional study. 82 (38%), 50 (23.1%) said that Hospital and Family Planning Clinic respectively are the resource places for contraceptives. Overall 84.3% health care providers were using different contraceptive methods. Condom used by partners was 74 (34.3%) but the preferred method of participants was oral contraceptive pills 34 (15.7%). Moreover, 134 (62%) had no constrains in using contraceptives and constrains faced by the partner were 20 (9.3%).

Conclusion: Findings of the study shows that the knowledge and awareness of contraceptive is high among health care providers however the practice of contraceptive method was comparatively high by their husbands. There is need to motivate the health care providers for contraceptive use in order to increase the prevalence in general population.

Keywords: Health Care Providers, Contraceptives, Knowledge, Practice, Attitude

Introduction

Pakistan's estimated population in 2014 is over 199 million, making it the world's sixth-most-populous country, behind Brazil and ahead of Nigeria. The Total Fertility Rate (TFR) of Pakistan is 2.86 children born/woman in (2014). According to UN projections, cited by Mustafa (2015) “Pakistan will become the fourth most populous country by the year 2050”. The growth rate of a country also depends upon the use of contraceptives. The contraceptive measures refer to the practices and methods of avoiding pregnancy or placing the interval between the births of children. The contraceptive prevalence Rate (CPR) is the percentage of women who are practicing, or whose life partners are practicing, any form of contraception. It is being considered that a healthy reproductive life is a right of couple, especially the women.

Reproductive rights were defined as “the basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive rights”(Tavrow, 2010) The International Conference on Population and Development (ICPD), held in Cairo in 1994, cited by Tavrow, (2010) was noteworthy for achieving a global consensus that all people – regardless of age, parity, marital status, ethnicity, or sexual orientation – are entitled to reproductive health and rights. In clinics and hospitals, health care providers hold the information and means that can make people to realize these rights. In fact, health care providers with adequate knowledge, skills, attitude and practices can influence the people to enhance reproductive health and rights.
The eight millennium development goals (MDGs) were identified as a target to achieve. Basically the target of the MDGs is to uplift the status of health of the public. Women’s health relates to the number of birth and interval in between the birth. Interval in between the birth or birth spacing could be possible by the use of contraceptive measure by the couple. Contraceptive prevalence rate in Pakistan indicates the low rate of contraceptive practices which are 29.6%. (WHO, 2010). Contraceptive prevalence rate is also one of the indicators of MDGs 5 which is related to the women health. In Pakistan, we are far away in achieving the MDGs. Dawson, (2015) stated that one way to reduce pregnancy/childbirth related deaths and illnesses is to reduce the number of unwanted pregnancies through the use of effective contraception. He further added that we know from the Pakistan Demographic & Health Survey (PDHS) that more than a quarter of all pregnancies are unwanted. Preventing those pregnancies through contraceptive use (assuming 100% effectiveness) could have averted 8,500 maternal deaths and 106,250 maternal morbidities.

As prevalence of contraceptive measure is low among the general population of Pakistan, it is important to know the contraceptive practice among the health care providers. According to Mustafa (2015) the role of health care provider that are female doctors, nurses, private practitioners, community-based distributors, midwives and nurse auxiliaries, pharmacists, and the assistants to all these are very important in imparting information related to contraceptive measure in reproductive health. “Providers have been characterized as service-delivery ‘gatekeepers' or 'street-level bureaucrats', because generally they alone decide who will be permitted to obtain information or medical attention, and under what conditions”.

Health care providers play an important role in imparting health education to the public. In order to provide the awareness among public we need to be aware of the health care provider’s knowledge, attitude and practices. It is important to know whether the health care providers who are the health guider to women, they themselves are practicing the same or not. This study is design to assess the knowledge, attitude and practices of contraceptive measure among married health care providers working in the public hospitals situated in Lahore. The study will assess the knowledge, attitude and practices of contraceptive use, preferred method and find out the problems to practices. Moreover, this study will help identifying the value and belief of health care providers in practicing contraceptive methods.

**Definition of terms**

*Health care provider:* A person who is trained to care for sick or injured people and who usually works in a hospital and in a clinic (Dictionary, 2014).

Health care providers are the persons who hold diplomat or baccalaureate education in medical and nursing and provide services at all level of health care system.

*Contraception:* The deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse. The major forms of artificial contraception are: barrier methods, of which the commonest is the condom or sheath; the contraceptive pill, which contains synthetic sex hormones which prevent ovulation in the female; intrauterine devices, such as the coil, which prevent the fertilized ovum from implanting in the uterus; and male or female sterilization.

*Knowledge:* Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Dictionaries, 2014).

Awareness or familiarity gained by experience of a fact or situation.

*Practice:* the actual application or use of an idea, belief, or method, as opposed to theories relating to it (Dictionaries, 2014).

*Attitude:* a settled way of thinking or feeling about something.

**Purpose**

1. To assess knowledge of contraceptive among health care providers.
2. To study the attitude towards contraceptives.
3. To study current practices about contraceptives.
4. To identify the reasons of not practicing the same.

**Nature of study**

It is a descriptive study. The study mainly focused on the knowledge, attitude and practice of contraceptive methods among the health care providers of Lahore.

**Aim of the study**

The aim of this study is to endorse the contraceptive practices among women through health care providers.

**Significance of the study**

The problem of low contraceptive use is an important contributing factor in fertility regulation and hence reduction of mortality and morbidity related to reproduction. Despite the fact that knowledge affects contraceptive use and reproductive health is related to the use of contraceptive measures. In literature, no study has been done in Pakistan to look at the factors associated with contraceptive knowledge, attitude and practices of health care providers.

The aim of this study is to assess the knowledge, attitude and practices of contraceptive method among health care providers of public hospitals in Lahore that most probably could be the contributing factor to the low contraceptive practices in Pakistan.

The results will help us understanding the knowledge, attitude and practices of contraceptive use and constraint in practices. The gained experience could be utilized to evaluate the need and identify the ways to motivate the women to practice the same. In addition, the study result will help to convince the higher authorities to implement such services to impart the knowledge of contraceptive use among public through health care provider at different health setting level. Therefore the number of unintended pregnancies can be reduced and family planning and reproductive health goals are met.

**Literature review**

Knowledge about contraceptives is very significant in order to use the appropriate method of spacing between children. Health care providers are the key persons who can provide awareness and can guide for better choices among contraceptive to the general population (Mbando, et al., 2011). It is important to know the preferred method of practices of contraceptives among health care providers because they are the health educators. In most of the studies it was found that education is the prime influencing factor. It may have a direct influence on fertility, since education affects the attitudinal and behavioral patterns of the individuals. A number of Knowledge Attitude and Practice survey have been carried out covering different population groups (Thapa, et al., 2015 & Rao, et al., 2005). A survey conducted in Manipur concluded that the use of modern family planning methods increases with education, while female sterilization prevalence decline sharply with women’s education level (Ayub, et al., 2015). Moreover, recent analysis of Demographic Health Survey (DHS) for 25 developing countries confirms previous findings from the World Fertility Survey (WFS) that the better educated women are more likely to practice contraception (Lamidi, 2015). A study conducted by Samba (2014) on the Nurses and Nursing students about Emergency Contraceptives (EC) in Kenya mentioned that the level of knowledge of EC is poor and more information is needed.

A study conducted in Lahore at Aitchison Hospital reveals that the level of education of the women was 43 percent is matric however, 60 percent have the awareness related to contraceptives. In addition 54 percent women approved the use of contraception.

Another study conducted at Lahore, Pakistan revealed the low level of education that is 70 percent illiterate followed by the low prevalence of contraception that is 27.9 percent (Manzoor, et al., 2013).

The above studies clearly show the difference of urban and rural practices of contraception and the relationship of education too.
A study conducted with the women having unplanned pregnancy in Nigeria revealed the knowledge of contraception up to 85 percent among Nigerian women. The source of knowledge was the health care provider followed by mass media 38.4 percent and 21.4 percent respectively. The women agreed to the usefulness of contraception that is 86 percent however, only 8.7 percent women ever used the contraception. The constraints identified in this study were partner 54 percent, ill health 35 percent and religion contributed to 28 percent (Ross, et al., 2013).

Health Care Providers also have a major influence on the public’s sexual and reproductive health because many people consider them to be the best source of information on these issues. Not only are providers thought to be more knowledgeable by virtue of their training, but they are also believed to be more likely to keep matters confidential. For low-literate people, or those with limited access to the media or the Internet, health providers may be their only source of scientific information (Tavrow, 2010).

The role of health care provider is very much significant in practicing contraceptives and reproductive health. Some important questions about the role of provider attitudes and practices still have not been adequately researched. To date, reviewers have found no empirical evidence concerning the impact of provider behaviors on clients (Tavrow, 2010).

Age is also an important determinant for contraceptive choice. CPR is most common in young adults’ females as compare to the older adults. It has been concluded that majority (52.4%) of the women using contraception were in the age group of 15-34 years. The choice of contraceptive method can be influenced by the partner choice, self-health, family choice, religion and number of children (Manzoor, 2013).

The present study aimed to assess the knowledge, attitude and practice of contraceptive methods to enhance the contraceptive practice in future. The contraceptive prevalence rate (CPR) is defined as the percentage of married women, aged 15-49 years, using modern and traditional methods of contraception (Mustafa, et al., 2015). Contraceptive prevalence rate of Pakistan is 29.6% as compare to India 56.3%, Iran 73.7% that is high. But Afghanistan has 18.6% that is low in comparison to Pakistan (Rao, 2005). It shows that the prevalence rate of Pakistan is comparatively less than the neighboring countries except Afghanistan. There is an immense need to know the awareness, practice and attitude of the nurses because they play a key role in health industry. The preferences of health care providers and family planning educators directly influence the information provided to clients, thus swaying women’s decisions concerning method adoption. Specific method recommendations by health care workers reflect their training and may be partially motivated by incentives to adopt the same preferences expressed by other individuals and institutions (Ross, et al., 2013).

There are many contraceptives available in the market but the choice of the contraceptive depends upon the efficacy of the drug and also the side effects. The first edition of the WHO’s Medical Eligibility Criteria (MEC) states that, “WHO is giving priority to improving access to high quality care in family planning through a variety of strategies” and lists one of these strategies as “promoting the widest availability of different contraceptive methods so that people may select what is most appropriate to their needs and circumstances” (Harper, et al., 2012).

Approval of family planning was shown by 41% of males, as perceived by their wives in contrast to other studies of Sindh and Punjab, where 78% and 74% of husbands approved the use of contraceptive methods at the time of survey. Whereas, According to Pakistan Reproductive Health and Family Planning Survey 2000-2001 and Eastern Turkey, husband’s disapproval was the main factor for not using any family planning method among married women (Mustafa, et al., 2015). Attitude of husband was found to be an important factor for contraception use (Zakar, et al., 2012 & Alemayehu, et al., 2012).

Religion could be another predictor for contraceptive use. a study conducted in America states that the patterns of contraceptive use do not differ by religious affiliation among married women (Corbin, 2013). However the study conducted in Bangladesh where majority of the nurses are Muslims. Kamal, (2015) stated that The Quran does not prohibit birth
control, nor does it forbid a husband or wife to space pregnancies or limit their number. Thus, the great majority of Islamic jurists believe that family planning is permissible in Islam. Culture is another important predictor to influence the practices in the locality. Contraceptive use is likely to be affected by the fundamental cultural and social traits of a society (Yadav, et al., 2015).

**Methods**

**Setting**

This study was conducted in the capital of province of Punjab, Lahore. The target population was the health care providers of public hospitals located in Lahore. The setting includes the participant of Services Hospital, Lahore General Hospital, Sir Ganga Ram Hospital, Children Hospital, Myo Hospital and Nawaz Sharif Social Security Hospital. The total population of married health care providers, having two or more children and working at public hospital was approximately up to 600. The subjects were selected on the basis of convenient sampling technique. The health care providers who were having two or more children and willing to response the questionnaire included in the study. Questionnaire were distributed in all six setting through a group of helper and received back after completing the questions.

**Study design**

A cross sectional descriptive study design was adopted.

**Population**

The study population was all married health care providers working at the public hospitals in Lahore. The population also includes the health care providers who have number of children two or more. Population was based on different Hospitals located in territory of Lahore.

**Inclusion criteria**

The inclusion criterion of study was all married health care providers who have two or more children and working in the different public hospital in Lahore

**Exclusion criteria**

All married health care providers who have one or no child and also not working in public hospital were excluded in the study and those who do not want to take the part in the study

**Sampling**

Sampling technique is a way of selecting the participant from the target population and selecting the subject to be the part of the research. The study sample was followed by the set inclusive criterion based on none randomized convenient sampling technique. The subjects were free to participate in the study.

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**Research instrument**

A well-constructed close ended and choice selection questionnaire was developed by consulting the literature and discussion with the supervisor. The questionnaire was distributed to ten persons to check the understanding of the questions.
Data gathering procedure

The pilot testing of the questionnaire was done on ten persons to assess the understanding of the questions. Later on, the questionnaires were distributed in six setting of public hospitals that include Lahore General Hospital, Children Hospital, Services Hospital, Sir Ganga Ram Hospital, Myo Hospital and Nawaz Sharif Social Security Hospital. The questionnaire were distributed among the health care providers who meet the inclusion criteria after developing the complete understanding of questionnaire to them and collected back after the response was filled by the respondent.

Methods used to analyze data

The data was entered by the primary researcher on Statistical Package for Social Sciences (SPSS) (version 21) computer program on personal laptop. Percentages, mean of different variables are calculated by using the descriptive statistics. Tables and graphs are been developed to portrayed the data, also to explain and discuss the variables.

Study timeline

The study was done from Feb 2015 to January 2016.

Ethical consideration

Confidentiality was assured by not writing the name and personal information and willingness was obtained prior responding to the questionnaire. All information in this study is been kept confidential except to disseminate at required places.

Results

Table 1: Socio demographic characteristics of the participants (n =216)

<table>
<thead>
<tr>
<th>No of Children</th>
<th>(n = 216)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>94</td>
<td>43.5</td>
</tr>
<tr>
<td>3</td>
<td>74</td>
<td>34.3</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>12.0</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>6.5</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>8</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
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<table>
<thead>
<tr>
<th>Characteristics</th>
<th>(n=216)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in Years</td>
<td>(n=216)</td>
<td>Percent</td>
</tr>
<tr>
<td>&gt;20-30 Years</td>
<td>32</td>
<td>14.8</td>
</tr>
<tr>
<td>31-40 years</td>
<td>108</td>
<td>50.0</td>
</tr>
<tr>
<td>41 and above</td>
<td>76</td>
<td>35.2</td>
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<table>
<thead>
<tr>
<th>Income per Month</th>
<th>(n=216)</th>
<th>Percent</th>
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<tr>
<td>10,000-20,000</td>
<td>76</td>
<td>35.2</td>
</tr>
<tr>
<td>20,001-30,000</td>
<td>58</td>
<td>26.9</td>
</tr>
<tr>
<td>30,001-40,000</td>
<td>50</td>
<td>23.1</td>
</tr>
<tr>
<td>&gt; 40,000</td>
<td>30</td>
<td>13.9</td>
</tr>
<tr>
<td>No Response</td>
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<td>.9</td>
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<tr>
<td>Total</td>
<td>216</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Qualification</th>
<th>(n=216)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA/MSC</td>
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<td>4.6</td>
</tr>
<tr>
<td>BA/BSC</td>
<td>68</td>
<td>31.5</td>
</tr>
<tr>
<td>FA/FSC</td>
<td>40</td>
<td>18.5</td>
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<tr>
<td>Matric</td>
<td>86</td>
<td>39.8</td>
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<td>No Response</td>
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<td>5.6</td>
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<tr>
<td>Professional Qualification</td>
<td>n=216</td>
<td>Percent</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Nurse Midwife</td>
<td>190</td>
<td>88.0</td>
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<tr>
<td>BSN</td>
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<td>10.2</td>
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<tr>
<td>NSN</td>
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<td>.9</td>
</tr>
<tr>
<td>PhD Nursing</td>
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</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

Table 2- Knowledge and awareness regarding contraception

<table>
<thead>
<tr>
<th>Knowledge about Contraceptive</th>
<th>n=216</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Yes</td>
<td>212</td>
<td>98.1</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
<tr>
<td>Self–Study</td>
<td>18</td>
<td>8.3</td>
</tr>
<tr>
<td>Professional Study</td>
<td>172</td>
<td>79.6</td>
</tr>
<tr>
<td>Family Conversation</td>
<td>10</td>
<td>4.6</td>
</tr>
<tr>
<td>Community Discussion</td>
<td>10</td>
<td>4.6</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Availability</th>
<th>n=216</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>204</td>
<td>94.4</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>No Response</td>
<td>8</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraceptive Resource Place</th>
<th>n=216</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Planning Clinic</td>
<td>50</td>
<td>23.1</td>
</tr>
<tr>
<td>Health Centre</td>
<td>18</td>
<td>8.3</td>
</tr>
<tr>
<td>Hospital</td>
<td>82</td>
<td>38.0</td>
</tr>
<tr>
<td>Drug Store</td>
<td>46</td>
<td>21.3</td>
</tr>
<tr>
<td>General Store</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>No Response</td>
<td>14</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3- Practices of contraception

<table>
<thead>
<tr>
<th>Contraception methods for users</th>
<th>n=216</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal Method</td>
<td>20</td>
<td>9.3</td>
</tr>
<tr>
<td>Condom</td>
<td>74</td>
<td>34.3</td>
</tr>
<tr>
<td>Norplant Capsule</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Intra Uterine Devices</td>
<td>28</td>
<td>13.0</td>
</tr>
<tr>
<td>Contraceptive Pills</td>
<td>34</td>
<td>15.7</td>
</tr>
<tr>
<td>Contraceptive Injections</td>
<td>16</td>
<td>7.4</td>
</tr>
<tr>
<td>Calender / Rhythm Methods</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Multiple Option</td>
<td>2</td>
<td>.9</td>
</tr>
<tr>
<td>Not Using</td>
<td>34</td>
<td>15.7</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Constrain to Use Contraceptives</th>
<th>n=216</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>74</td>
<td>34.3</td>
</tr>
<tr>
<td>No</td>
<td>134</td>
<td>62.0</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>99.1</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>.9</td>
</tr>
</tbody>
</table>
Table 4: Attitude towards contraception

<table>
<thead>
<tr>
<th>Types of Constrains</th>
<th>(n=216)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>Cultural</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Family</td>
<td>18</td>
<td>8.3</td>
</tr>
<tr>
<td>Partner</td>
<td>20</td>
<td>9.3</td>
</tr>
<tr>
<td>Self – Health</td>
<td>18</td>
<td>8.3</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>37.0</td>
</tr>
<tr>
<td>No Constrains</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraceptive Usage Regularity</th>
<th>(n = 216)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>148</td>
<td>68.5</td>
</tr>
<tr>
<td>No</td>
<td>62</td>
<td>28.7</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitude Towards Contraceptives</th>
<th>(n = 216)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>148</td>
<td>68.5</td>
</tr>
<tr>
<td>No</td>
<td>68</td>
<td>31.5</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Description of the result

In reference to the Table I, Majority of the participants (50%) was lies in the age of 31-40 years of age and 35.2% were above 41 years old. Related to the financial strength 35.2% of the participant had Rs:10,000-20,000 income per month. 26.9% and 23.1% had 20,001-30,000 and 30,001-40,000 respectively. 13.9% of the participant earns more than Rs: 40,000 per month. The academic qualification of the participant shows that the majority of the participants has secondary school certificate as the percentage shows 39.8 % followed by 31.5 % nurses were undergraduates. Professional qualification revealed the data as 88% participants were Nurse Midwives and only 10.2% were BSN. Most of the participant 43.5% has 2 children followed by 34.3% of participant bears 3 children. Only 3.7% of nurses carry more than five children. Results shows that 98.1% participants have knowledge about contraceptives and only 1.9% participants said that they have no knowledge about contraceptives.

Table No 2 shows that 79.6% got the knowledge from their Professional study and only 8.3% learnt by self-study. Related to the availability of contraceptive material 94.4% health care providers said that they have an easy access to contraceptive material. Moreover, out of 216, 50(23.1%) nurses mentioned that Family Planning clinic and 82(38%) said hospital is the resource place for contraceptives. In response to the question, regarding practices of contraceptives 74 (34.3%) out of 216 prefer the use of condom by their husbands but 34 (15.7%) used contraceptive pills. Intrauterine devices were the least preferred method among health care providers and 34 (15.7%) health care providers were not using any method. The response to the question related to constrain in practicing contraceptives 134 (62%) said that they do not have constrains in practicing contraceptives however, 74/216 (34.3%) participants reported the constraints in using contraceptives. 20 out of 74 participants mentioned that they have constrains from their partner.

Table III shows the type of constraints. It reveals that self- health of the women hold them to practice contraceptives followed by the influence of religious practices that is 8.3 and 5.6 respectively. Result shows the attitude of the health care providers regarding regular use of contraceptives. 148 (68%) out of 216 said that they use contraceptives regularly and 62 (28.7%) were not using it regularly. In response to the question whether to use the
contraceptives or not 180/216 (83.3%) participant supported the idea of contraceptives. Only 16.7 percent of the participant remained against the idea of contraceptive usage.

**Discussion**

Family planning is defined by WHO as, “a way of thinking and living that is adopted voluntarily, upon the basis of knowledge, attitudes and responsible decisions by individuals and couples, in order to promote the health and welfare of family groups and thus contribute effectively to the social development of a country.”

Pakistan is being 6th most populous country in the world. It has 177 million populations with total fertility rate of 3.5 per woman and population growth rate 2.05 percent according to Economic Survey of Pakistan 2010-11. The growth rate of the Pakistan has begun to decline. But still it is very important to overcome the growth rate of the population for better utilization of economic resources. Family Planning is one of the most important measures to control the growth rate. Pakistan Government has started family Planning programs but not yet successful as in other countries.

The present study aimed to assess the knowledge, attitude and practice of contraceptive methods to enhance the contraceptive practice among health care providers in future. Results showed 98.1% have knowledge about contraceptives as compared to 97.4% and 99% in studies conducted at Lahore (Zakar, et al., 2012). The knowledge of the participant is high as they all are health care providers. The source of knowledge of 79.6% participants was their professional qualification followed by self-study 8.3%. Community and family discussions remained at 4.6% as the source of their knowledge; however 2.8 % did not response. In India, social circle (70%) and media (39%) were the main sources of awareness (Relwani, et al., 2012)

Related to the availability of contraceptive material 94.4% participant said that the contraceptives are easily available to them as compare to number of studies that shown a close correlation between the travel times from a woman’s home to any health clinic and the likelihood that she will use a contraceptive. In Bangladesh, couples were two and a half times less likely to practice contraception if acquiring a method required traveling for 30 minutes or more to a clinic (Arora, et al., 2013). In this study the participants are health care providers and contraceptives/ family clinics are available in mostly hospitals so they can have an easy access to the material. Moreover, 38% participants responded that they got the material from hospital as compare to the results of Campbell that her study showed most of the participant knew that contraceptive were available in Government Hospital (62.8%) and Medical shops (52.5%)(Sathar, 2013).

This study revealed that 84.3% interviewed participants were using contraceptives as compare to the contraceptive prevalence rate (CPR), or the percentage of married, non-pregnant women using both modern and traditional methods of contraception, rose from 12 percent in 2000-01 to 28 percent in 2010-11, but has remained around 30 percent since then (Ayub, 2015). That shows the high prevalence rate in health care providers.

The preferred methods of contraceptives by users were condom (34.3%) by their partners and (15.7%) were using oral contraceptive pills as compare to the study done by Najafi-Sharjabad (2013) The most common method chosen was the barrier method (15%), followed by IUCD (10%) and the pill (10%) in Pakistan. In another study conducted by Anjum (2014) the Oral contraceptive pills were the predominant method used (32%). Health care providers that were not using contraceptives were 15.7 % as compare to non-users proportions were 91.5% (Bulto, et al., 2014). Two more studies showed 55% and 44.6% of non-users (Desai, 2013 & Tilahun, 2013). The prevalence rate of contraceptive among health care providers of Lahore is significantly higher in this study as compare to shared figures.

In the response of questions asked regarding constrains 50.5 percent of the total participant did not response. Out of 45.5 percent (34.6%) respondents accepted to bear the constrain in practicing the contraceptive and 62.6% said they do not have any constrains of using contraceptives. The type of most common constrain (9.3%) from partner. As Avidime (2013)
mentioned in his study that cultural and social constraints such as husband's approval prevented this demand from being converted into family planning use. Moreover, (8.3%) constrains were due to self –health and family influence. The study conducted in Lahore support this study as 8.33% constraint was reported by the women is family.

Majority of the couples were not in favor of regular use of contraceptive drugs. The relationship between fertility intention and childbearing—and the link between fertility intention and contraceptive use—are strongly affected by other, independent attitudes, such as the attitude toward contraception itself (Yoo, et al., 2014). The present study depicts the positive attitude of health care providers toward contraceptive use as shown in figure 13. In response to the question whether to use the contraceptive or not, 83.3% of nurses showed positive attitude while 16.7% of participant did not support the idea. This study differ the results of Manzoor (2013) who found the positive attitude of participant 54 % and disapproval 32%. This study signifies the knowledge, attitude and practices of contraceptive among health care providers as compare to the present contraceptive rate of Pakistan 30%.

Limitations

This study has several limitations as the sample size was small and the study done only on female health care providers and their partners were not with them during interview. The responses of male partners were not taken. Moreover, study focused only female health care providers working in government hospitals of Lahore that is urban area. The nurses of private hospital and rural health care facilities were not the part of this study. Further studies can be replicate on the health care providers working in the private hospitals as well as health workers of peripheral health care facilities. In addition, health care providers include other team members too but this study had not included them.

Conclusion

Findings of this study shows that majority of the health care providers have knowledge about contraceptives and its use. Reproductive health and family planning methods are been taught in the curriculum of the nurses and doctors so the professional qualification is the main source of awareness. Material is available to majority of the participants from health clinics and hospital.

The most common method in use was condom by their partners but contraceptive pills and intrauterine devices were the choice of participants. All participants were not using the contraceptive methods. Moreover, mostly participants have no constrains in using contraceptives. However, the participants who were facing constrains in use of contraceptives was due to partner, family and self- health. In addition, mostly participants used contraceptives regularly and showed positive attitude towards its use.

Increasing knowledge, awareness and importance of contraceptives among health professionals is important in order to increase awareness and contraceptive prevalence among general population of reproductive age.

Recommendations

So far, this study has depicted the sufficient knowledge and practice of contraceptives among health care providers, however, their attitude towards encouragement to general population is not evaluated. There is need to evaluate the role of health care providers in promoting contraceptive use among general population. The promotion of advance methods of contraceptives should be there so the clients can make choices among the methods.

There should be awareness programs regarding the use, effects and side effects of contraceptives. A policy should be introduced for an easy access of family planning centers and contraceptive drugs. The government should make sure the availability of the contraceptive drugs at peripheral level. There is an immense need of awareness programs for couples to overcome the barriers from male partners.
Further studies should be planned to evaluate the knowledge, attitude and practice of lady health visitors, lady health worker and midwives as these health care provider mostly work at rural and peripheries of the country and influence the public.

References


Ultrasonographic Prediction of Prostatic Enlargement in Urualla Imo State, Nigeria

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Abstract

Background: The prostate is a reproductive gland found in males. It is responsible for the production of the fluid that carries sperm during ejaculation. The prostate gland usually enlarges with age and eventually gets to a size when it causes obstruction to urine flow which is the most common symptom. A small amount of prostate enlargement is present in many men over age 40. Two common identifiable causes of prostatic enlargement are benign prostatic enlargement and prostatic cancer. Ultrasonography is a non-invasive non ionizing imaging method that uses sound waves to evaluate internal organs of the body. Aim: The main objectives of this research were to determine the percentage of population with prostatic enlargement, to ascertain relationship of prostatic enlargement with age. Method: Prospective study design was used and data collected was focus on men from the age group of 50 years and above. Results: The average age of those screened was 63.11+-7.85years. There was a higher age average of 64.28years for those with prostatic enlargement when compared with normal subjects with average age of 62.33 years. Conclusion: Ultrasonographic evaluation of prostatic volume is an important screening tool for both benign prostatic enlargement and prostate cancer.

Keywords: Prostatic enlargement, Ultrasonography.

Introduction

The prostate is a reproductive gland found in males. It is responsible for the production of the fluid that carries sperm during ejaculation. The prostate gland usually enlarges with age and eventually gets to a size when it causes obstruction to urine flow which is the most common symptom. A small amount of prostate enlargement is present in many men over age 40. Two common identifiable causes of prostatic enlargement are benign prostatic enlargement and prostatic cancer. Ultrasonography is a non-invasive non ionizing imaging method that uses sound waves to evaluate internal organs of the body.

In our world today, many men are prompted to learn about prostate only because the way they urinate has changed. Or perhaps they have heard that older men over 50 are more likely to have “prostate trouble” than younger men.

The main objectives of this research is to determine the percentage of population with prostatic enlargement, to ascertain relationship of prostatic enlargement with age and also to shed light on a particular prostate disease: noncancerous enlargement of the prostate called benign prostatic hyperplasia (BPH), this disease often begins after age 50.

From literature review, after a man has passed the age of 40, especially after the age of 60, the prostate will become a source of problems.

Benign prostatic hyperplasia is called BPH and is a condition in men in which the prostate gland is enlarged and not cancerous. It is the most common prostate problem for men older than age 50. In 2010, 14 million men in the United States had lower urinary tract symptoms suggestive of benign prostatic hyperplasia (BPH). Although this disease, benign prostatic hyperplasia rarely causes symptoms before age 40 and the occurrence and symptoms increase with age. About 50 percent of men between the ages of 51 and 60 and up to 90 percent of men...
older than 80 were affected by benign prostatic hyperplasia. (Wilt et. al, 2011)

The prostate is a walnut-shaped gland that is part of the male reproductive system, located just between the bladder and the base of the penis. The urethra which is the tube that carries urine from the bladder and semen out through the penis runs through the center of the prostate. The real function of the prostate is to produce a fluid that goes into semen. This prostate fluid is very essential for fertility in men. The gland surrounds the urethra at the neck of the bladder. The bladder neck is located where the urethra joins the bladder. The urethra and bladder are parts of the lower urinary tract. The prostate has median lobe or a section that is enclosed by an outer layer of tissue that is located in front of the rectum, just below the bladder. Because of urethra location, an enlarged prostate can squeeze the urethra, causing urinary problems. A prostate checkup is highly needed because abnormalities develop as a man gets older, mainly after the age 50. Signs of prostate problems may include difficulties urinating and sexual pain. If a man has symptoms that are bothersome, he should visit his doctor.

Fig 1: A male reproductive system showing a walnut-shaped gland of prostate.

Fig 2: Ultrasonographic measurement of prostatic volume

Causes of benign prostatic hyperplasia

The cause of benign prostatic hyperplasia is not quite clear; however, it occurs mostly in older men. Before puberty, benign prostatic hyperplasia does not develop in men whose testicles were removed and for this reason; some researchers believe that factors causing this is related to aging and the testicles.
Studies have suggested that benign prostatic hyperplasia may occur due to the higher proportion of estrogen within the prostate increases the activity of substances that promote prostate cell growth. (NIDDK, 2014)

Another theory focuses on dihydrotestosterone (DHT), a male hormone that plays a role in prostate development and growth. Some other research has recently indicated that even with a drop in blood testosterone levels, older men will continue to produce and accumulate high levels of DHT in the prostate. This DHT accumulation encourages growth of prostate cells. Scientists have noted that most men who do not produce DHT develop benign prostatic hyperplasia and those who are likely to develop benign prostatic hyperplasia are men with these factors: age 40 years and older, family history of benign prostatic hyperplasia, medical conditions like obesity, heart and circulatory disease, lack of physical exercise and erectile dysfunction. (NIDDK, 2014)

**Symptoms**

Lower urinary tract symptoms suggestive of benign prostatic hyperplasia may include: urinary frequency, urinary urgency, trouble starting a urine stream, a weak or an interrupted urine stream, dribbling at the end of urination, nocturia, urinary retention, urinary incontinence, pain after ejaculation or during urination, urine which has an unusual color or odour. Most often, benign prostatic hyperplasia symptoms come from a blocked urethra and a bladder that is overworked from trying to pass urine through the blockage. The size of the prostate does not always determine the severity of the blockage or symptoms. In some case, men with greatly enlarged prostates may have little blockage and few symptoms, while other men with minimally enlarged prostates have greater blockage and more symptoms. Few men with benign prostatic hyperplasia have lower urinary tract symptoms. (Tacklind *et al.*, 2012)

Some men may not know they have a blockage until when they cannot urinate. This condition is called acute urinary retention which result from taking over-the-counter cold or allergy medications that contain decongestants like oxymetazoline and pseudoephedrine. The main side effect of these medications can prevent the bladder neck from relaxing and releasing urine. Most medications that contain antihistamines like diphenhydramine weaken the contraction of bladder muscles which result to urinary retention, difficulty in urinating and painful urination. Urinary retention can also occur in men that has partial urethra blockage which may be as a result of cold temperatures, alcohol consumption and a long period of inactivity. Symptoms of benign prostatic hyperplasia also signal more severe conditions like prostate cancer. (Tacklind *et al.*, 2012)

**Complication**

Sometime complications such as acute urinary retention, blood in urine, urinary tract infections (UTIs), bladder damage, kidney damage and bladder stones occur in benign prostatic hyperplasia.

In Most men with benign prostatic hyperplasia, this complications may not occur rather develop kidney damage will result to a serious health threat when it occurs.

**Those at risk**

Men that have the following symptoms should seek immediate medical care: complete inability to urinate, painful, frequent, and urgent need to urinate, fever and chills, blood in the urine, severe discomfort or pain in the lower abdomen and urinary tract.

**Diagnosis**

Benign prostatic hyperplasia can be diagnose based on a personal and family medical history which is the first step to take, a physical examination done by the healthcare provider and medical tests which may include: urinalysis- involves testing a urine sample, a prostate-specific antigen (PSA) blood test, urodynamic tests which include a variety of procedures that look at how well the bladder and urethra store and release urine, also cystoscopy - a procedure
that uses a tube-like instrument, called a cystoscope which look inside the urethra and bladder., ultrasonography- a non invasive non ionizing imaging method that uses sound waves to evaluate internal organs of the body. Biopsy - a procedure that involves taking a small piece of prostate tissue for examination with a microscope. (Tacklind et.al, 2009).

**Treatment**

Change in lifestyle, medications, minimally invasive procedures and surgery are the treatment option for benign prostatic hyperplasia.

**Prevention**

Researchers have not found a way to prevent benign prostatic hyperplasia but however, regular prostate examination or check up, changes in eating, diet, or nutrition could help with treatment. Men can get early treatment and minimize benign prostatic hyperplasia effects by recognizing lower urinary tract symptoms and identifying an enlarged prostate.

**Methods**

**Area of study**

The primary area of focus for this study was the cities of Imo metropolis, urualla precisely, Idea to North Local Government Area of Imo State, Nigeria. It is the administrative headquarters. It has an area of 7 km and a population of 62102 at the 2006 census. The study also focused on working populace who are adults above the age of fifty (50) years above in Idea to North Local Government Areas (LGA’s).

**Study design**

Analytical evaluation ultrasound scan screening was carried on randomize 70 male patients who suspected to have BHP symptom. Retrospective study design was used and data collected was focus on men from the age group of 50 years and above. The study was conducted from November to December 2014. A total of 70 out of 100 clients were eligible participants that agreed to be screened. Ethical approval to access the client was obtained from St.Michael Catholic Church Urualla, Imo State Ethical review board.

**Data analysis**

Data analysis was done with SPSS version 16.0. All analysis was done at P=.05. Calculation of correlation and Hypothesis testing carried.

**Results**

<table>
<thead>
<tr>
<th>Table 1. Frequency distribution of prostatic enlargement.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prostatic enlargement</strong></td>
</tr>
<tr>
<td>Prostatic volume</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Valid</td>
</tr>
<tr>
<td>no prostatic enlargement</td>
</tr>
<tr>
<td>prostatic enlargement</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Fig 2: Bar chart showing prostatic enlargement.

**Table 2. Frequency table showing prominence of median lobe**

<table>
<thead>
<tr>
<th>MEDIAN LOBE coded</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Normal</td>
<td>54</td>
<td>77.1</td>
</tr>
<tr>
<td>Prominent</td>
<td>16</td>
<td>22.9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 3. Showing bladder wall thickness distribution**

<table>
<thead>
<tr>
<th>BLADDER WALL THICKNESS code</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid normal</td>
<td>64</td>
<td>91.4</td>
</tr>
<tr>
<td>thickened</td>
<td>6</td>
<td>8.6</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 4. Correlation between age and prostatic volume**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>AGE</th>
<th>PROSTATIC VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AGE</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.400</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>70</td>
</tr>
<tr>
<td>PROSTATIC VOLUME</td>
<td>Pearson Correlation</td>
<td>.147</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.400</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>70</td>
</tr>
</tbody>
</table>

**Table 5 Analysis between age and prostatic volume**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Prostatic enlargement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>no prostatic enlargement</td>
<td>42</td>
<td>62.3333</td>
<td>8.58681</td>
<td>1.87380</td>
</tr>
<tr>
<td>prostatic enlargement</td>
<td>28</td>
<td>64.2857</td>
<td>6.74170</td>
<td>1.80180</td>
<td></td>
</tr>
<tr>
<td>P value=0.479</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 6. Analysis between prostatic volume and bladder wall thickness**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>BLADDER WALL THICKNESS code</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROSTATIC VOLUME</td>
<td>Normal</td>
<td>32</td>
<td>23.8369</td>
<td>16.76596</td>
<td>2.96383</td>
</tr>
<tr>
<td></td>
<td>Thicked</td>
<td>3</td>
<td>40.9533</td>
<td>12.85502</td>
<td>7.42185</td>
</tr>
<tr>
<td>p value=.096</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A total of 70 persons were screened by ultrasonography for prostatic enlargement at Urualla Imo State, South East, and Nigeria. Statistic shows that the mean age of subjects was 63.11+-7.85 years. The age range was 30. The population was predominantly elderly.

Table 1 and 2 shows that out of the 70 persons screened, 28 i.e. 40 % had enlarged prostate with 22.95% having prominent median lobe.

6% had associated thickening of the urinary bladder wall as shown in table 3.

There is weak positive correlation between age of subjects and prostatic volume (Table 4). The mean age for those with prostatic enlargement (64.28 years) was higher than those with normal prostatic volume (62.33 years)

The relationship between prostatic volume and age/bladder wall thickness was not statistically significant as shown in table 5 and 6.

It was observed that subjects with prostatic enlargement with average volume of 40.95 cm³ had thickened urinary bladder wall whereas those without

Prostatic enlargement with average volume of 23.84 cm³ had normal bladder wall thickness.

However the relationship between prostatic volume and prominence of median lobe was statistically significant (p value =0.0001)

The median lobe was found to be prominent in subjects with prostatic enlargement with average volume of 43.94 cm³ whereas those with normal prostatic volume with average of 19.78 cm³ had normal median lobe.

**Discussion**

This study carried out retrospectively from data collected in Urualla, Imo State. The average age of those screened was 63.11+-7.85 years. This range is narrow and may explain why there was no significant correlation between age and prostatic enlargement even though a higher age average of 64.28 years had prostatic enlargement when compared with normal subjects with average age of 62.33 years. This agrees with previous literature that indicates that prostatic enlargement is associated with advancing age. Therefore age is a major factor in predicting the probability of prostatic enlargement which serves as a screening test for benign prostatic enlargement and prostatic cancer.

Urinary obstruction is a very common consequence of prostatic enlargement and when long standing manifest as bladder wall thickening. This is illustrated by the fact that urinary bladder wall was thickened only in participants with enlarged prostate. Median lobe prominence is another factor that was seen in cases with prostatic enlargement which agrees with other studies where it was seen in benign prostatic enlargement.

**Conclusion**

Ultrasonographic evaluation of prostatic volume is an important screening tool for both benign prostatic enlargement and prostate cancer. It is non invasive and non ionizing with the option of repeated scan as well as follow up. Ultrasound is also able to detect complication of urinary obstruction. Age is the single most important factor in predicting prostatic enlargement.

It is recommended that subjects above 40 years should have a pelvic ultrasound to evaluate the prostatic volume. Early prostate cancer can only be detected by a regular prostate checkup.
and is highly advised.

Acknowledgement

I want to appreciate God for making this work a reality and also thank my husband Dr. Mgbe Emeka for his financial support and otherwise. God bless you.

References

[1.] National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), September, 2014.
Road Traffic Accidents and Injuries Among Form 6 Students in Muar

Article by Roy Rillera Marzo\textsuperscript{1}, Geerththanah Vijayakrishnan\textsuperscript{2} & Jananny Mumudi Vanthen\textsuperscript{2}

\textsuperscript{1}Deputy Dean, Master in Public Health, Fellow in Public Health
\textsuperscript{2}Doctor of Medicine

Abstract

Introduction: Road traffic accident refers mainly to any accident involving at least one road vehicle, occurring on a road open to public circulation, and in which at least one person is injured or killed. Road traffic accidents are a recognized dominant cause of injury and death among teenagers worldwide and in Malaysia. Road traffic accidents and injuries is a public health problem worldwide. In 2002, there are 1.2 million people die as a result of road traffic accidents and 50 million are injured and disabled. It is also the 11th cause of death in the world and accounts for 2.1% of all deaths globally.

Methods: This is a descriptive cross sectional study that targeted form six students as our population in 6 different higher secondary schools in Muar with 280 respondents. Data was collected through 12 items of multiple structured questions and 5 items of feedback questions, which of overall 17 items of questions in our questionnaire.

Results: Among 280 respondents, 84.6% of them had met with an accident. Majority of the respondents are male (90.7 %), Malay (89.9 %), and come from a low income background (97%). Surprisingly, there are 66 (90.4%) have not attended a driving lessons while 82 (94.3%) of them did not have a driving license. Among the entire respondent surveyed, 76 (96.2%) of them did not wear seatbelts or helmets. The remaining 43 which is 15.4% of them had not met with an accident. There is a significant association between motor vehicles accidents towards driving lessons (\(P=0.001\)), driving license (\(P=0.001\)), usage of seatbelts or helmets (\(P=0.001\)).

Conclusion: Our study shows that there was a significant association between road traffic accident and injuries with not having a driving license, not attending driving lessons and usage of seatbelts or helmets.

Recommendation: Our government should implement strict rules and tough penalties such as increasing fines and summon as to curb traffic accidents. For the awareness, schools have a role to play by emphasizing the importance on road safety, like usage of seat belts, proper driving practice by organizing awareness campaigns and seminars which is given by road traffic officers. The media also needs to draw the attention of all road users both to dangers and to safe practices on the road.

Keywords: Car occupant accidents, Car occupant injuries, late adolescents, Students, Safety belt or helmets

Introduction

Transportation is the act of moving something from one place to another (Wikipedia, 2015, December 29, Traffic collision). A road traffic accident refers mainly to any accident involving at least one road vehicle, occurring on a road open to public circulation, and in which at least one person is injured or killed. It can also cause serious injuries to the drivers as well as road passengers (Mohd Zakwan, 2011)

Serious injuries are defined as physical injury which creates a substantial risk of death, or which causes serious disfigurement, serious impairment of health, or serious loss or impairment of the function of any bodily organ (Insee, 2015)

Road traffic accidents and injuries is a public health problem worldwide. In 2002, 1.2 million people die as a result of road traffic accidents and 50 million are injured and disabled.
It is also the 11th cause of death in the world and accounts for 2.1% of all deaths globally (World Report on Road Traffic Injury Prevention, 2004).

Injuries including road traffic accidents are 3rd cause of admission and 5th cause of death in Malaysian government hospitals in 2003. In the year 2003 about 17 people are killed a day (Health Facts, 2003). The incidence rate of motor vehicle accidents in Malaysia 2000 was 107.64 per 10,000 populations (Ministry of Health Malaysia, Malaysia’s Health 2002). Motorcars are most commonly involved, followed by motorcycles, lorries/vans (Royal Malaysian Police 2004).

Road traffic accidents are a recognized dominant cause of injury and death among teenagers worldwide and in Malaysia.

A national study in 1996 reported that most of the road injuries occurred among 10-19 years (31.0%), followed by 20-29 years of age. Death was more common among the young adults, followed by adolescent (Epidemiology of Injuries 1997). In the year 2000, adolescent between 16-20 years were the majority (16.37%) of those who were involved in road traffic accidents (Royal Malaysian Police 2004).

These road traffic accidents are always beyond control but somehow the Malaysian government has taken an initiative plans and programmes to control this issue, through the existence of road networks in Malaysia (Mohd Zakwan, 2011)

Many consequences can be related to this issue whereby there is great lost in potential healthy years of life of productivity among the youthful group. There is also minimal information on safety practices particularly among adolescent who are also a major road user in the country.

The past study was to determine the prevalence of road traffic accidents and injuries involving motor vehicles among the upper six students in Selangor. It also determines the association between the injured motorcar occupants with related safety factors like usage of the seat belt, having driving lessons and having driving license.(Car occupants accidents and injuries among adolescents in a state in Malaysia, 2005)

When the causes are well known, we have to take some preventive measures to control these phenomena. There is no definite way to put a full stop for this road traffic accidents and injuries but we can prevent them from occurring.

Therefore, it is important to conduct this study to get all the variables as many as possible in number of accident increment every year. This study will propose an appropriate accident prediction model which can be use by any users that can help them in providing the safety precautions and future work for safety issues especially for related agencies and for the road users in the future.

**Objective**

**General**

To study the road traffic accidents and injuries among Form 6 students in Muar

**Specific**

1. To identify socio demographic characteristics affecting the road traffic accident and injuries
2. To determine the risk factors on road traffic accidents and injuries
3. To determine the association between motor vehicle accidents and injuries towards risk factors

**Methodology**

**Study design**

This was a descriptive, cross-sectional, school based study which was conducted in 6 secondary schools in Muar, district of Johor.
Sample size determination

Cluster sampling method was used to select the town from regions in Muar and simple random sampling was used to select the schools in the respective region that are chosen during the cluster sampling. Our target population included in this study were form six students from secondary school in Muar. The survey was conducted among 280 students.

Survey instrument

Data was collected using a structured questionnaire which was distributed to the 6 secondary schools. The questionnaire is self-administrated and an informed consent gotten from all the participants.

A pilot study was carried out to assess the reliability and validity of the pre-tested questionnaire where 20 form six students were given the questionnaires. The cronbach’s alpha showed 0.779 which showed that the questionnaire was reliable.

Questionnaire design

The validated questionnaire which was used in the survey is based in English Medium which was translated into Bahasa Melayu. This is because the medium of instructions of their school were Bahasa Melayu.

The questionnaires partly adapted from a pretested questionnaire used for similar studies carried out in Selangor, Malaysia. It is a 12 item questionnaire which is divided mainly into socio demographic factors, risk factors on road traffic accidents and injuries, and the association between motor vehicle accidents and injuries towards risk factors.

Data analysis procedures

The data was first coded and interpreted by PASW Statistics Student Version 18. Data analysis included descriptive statistics which was used to describe participants' demographic characteristics, and texts, tables, graphs, percentages or mean was used to present the results.

Ethical consideration

Medical Research Ethics Committee (MREC) of Asia Metropolitan University will be required to review the protocol to insure full protection of the rights of study subjects. Following the approval by MREC, NMRR (National Malaysian Research Register) registration will be carried out. Upon acquiring the NMRR registration number, the questionnaires were distributed to the study subjects. A covering letter assuring confidentiality of all the information provided accompanied the questionnaires.

Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>151</td>
<td>53.9</td>
</tr>
<tr>
<td>Female</td>
<td>129</td>
<td>46.1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>139</td>
<td>49.6</td>
</tr>
<tr>
<td>Chinese</td>
<td>108</td>
<td>38.6</td>
</tr>
<tr>
<td>Indian</td>
<td>33</td>
<td>11.8</td>
</tr>
</tbody>
</table>
The sociodemographic of the respondents are shown in Table 1. Out of 280 respondents, 53.9% were men. Among the participants, Malay (49.6%) is highest and followed by Chinese (38.6%) and Indian (11.8%). The respondents are mainly from a lower family income which is 127 out of 280. The qualified instructor had taught the respondents mostly to drive by 55.4%. Among the participants, 178 were not stopped by the JPJ.

Table 2. Sociodemographic characteristic of students who met with accident and injuries

<table>
<thead>
<tr>
<th>Variable</th>
<th>Yes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>137 (57.8)</td>
</tr>
<tr>
<td>Female</td>
<td>100 (42.2)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>125 (52.7)</td>
</tr>
<tr>
<td>Chinese</td>
<td>84 (35.5)</td>
</tr>
<tr>
<td>Indian</td>
<td>28 (11.8)</td>
</tr>
<tr>
<td><strong>Family Income</strong></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>108 (45.6)</td>
</tr>
<tr>
<td>Middle</td>
<td>98 (41.4)</td>
</tr>
<tr>
<td>High</td>
<td>31 (13)</td>
</tr>
<tr>
<td><strong>Who taught you to drive?</strong></td>
<td></td>
</tr>
<tr>
<td>Family Member</td>
<td>42 (17.7)</td>
</tr>
<tr>
<td>Friends</td>
<td>65 (27.4)</td>
</tr>
<tr>
<td>Qualified Instructor</td>
<td>130 (54.9)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>237 (100)</strong></td>
</tr>
</tbody>
</table>

Table 3(A). Risk Factors contributing road traffic accidents and injuries

<table>
<thead>
<tr>
<th>Variable</th>
<th>Met With Accident (%)</th>
<th>Had Not Met With Accident (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driving Lessons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>171 (83)</td>
<td>36 (17)</td>
</tr>
<tr>
<td>No</td>
<td>66 (90.4)</td>
<td>7 (9.6)</td>
</tr>
<tr>
<td><strong>Driving License</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>155 (79.9)</td>
<td>39 (20.1)</td>
</tr>
<tr>
<td>No</td>
<td>82 (94.3)</td>
<td>4 (5.7)</td>
</tr>
<tr>
<td><strong>Wear Seatbelts/Helmets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>161 (80.1)</td>
<td>40 (19.9)</td>
</tr>
<tr>
<td>No</td>
<td>76 (96.2)</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td><strong>If yes, How Often Use Seat belt / helmet</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Out of 280, only 237 of them met with accidents and they are mainly males with the leading percentages of 52.7%. Of these, Malays has the highest percentage of 52.7%. The participants who met with accidents and injuries are mostly from low family income of 45.6%. The participants who had knowledge on driving from the qualified instructor met with the most accidents with 54.9% followed by friends and family member.

Out of 237 respondents, 90.4% of them did not attend driving lessons, 94.3% did not have a driving license, and 96.2% not wearing seatbelts or helmets. From the 161 respondents who wearing seatbelts or helmets, 144 always wear and 17 of them seldom wear seatbelts or helmets.

Table 3 (B). Reason for Using and Not Using Seatbelts/Helmets

<table>
<thead>
<tr>
<th>Reasons for using seat belts/helmets</th>
<th>(N) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent from injuries</td>
<td>113(47.7)</td>
</tr>
<tr>
<td>A habit</td>
<td>48(20.2)</td>
</tr>
<tr>
<td>Because it is the regulation</td>
<td>40(16.9)</td>
</tr>
<tr>
<td>Fear of being fined</td>
<td>31(13.1)</td>
</tr>
<tr>
<td>Reminder from the car sensor system</td>
<td>5(2.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons for Not using seat belts/helmets</th>
<th>(N) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving short distance</td>
<td>82(34.6)</td>
</tr>
<tr>
<td>Forgot to put on</td>
<td>63(26.6)</td>
</tr>
<tr>
<td>Seat belts/helmets are uncomfortable</td>
<td>33(13.9)</td>
</tr>
<tr>
<td>Do not want clothes creased / do not want hair to be messy</td>
<td>23(9.7)</td>
</tr>
<tr>
<td>In a hurry</td>
<td>21(8.9)</td>
</tr>
<tr>
<td>Driving in a not busy area</td>
<td>15(6.3)</td>
</tr>
</tbody>
</table>

Based on the results, the reasons for using seatbelts are to prevent from injuries with a highest percentage of 47.7% and followed by the others. Surprisingly, 34.6% of them feel they drive only to short distance and hence they do not wear seatbelts.

Table 4. Association between motor vehicle accidents and injuries towards risk factors

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Met With Accident</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (%)</td>
<td>No (%)</td>
</tr>
<tr>
<td></td>
<td>p Value</td>
<td></td>
</tr>
<tr>
<td>Driving Lessons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>171(83)</td>
<td>36(17)</td>
</tr>
<tr>
<td>No</td>
<td>66(90.4)</td>
<td>7(9.6)</td>
</tr>
<tr>
<td>Driving License</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>155(79.9)</td>
<td>39(20.1)</td>
</tr>
<tr>
<td>No</td>
<td>82(94.3)</td>
<td>4(5.7)</td>
</tr>
<tr>
<td>Wear Seatbelts/Helmets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>161(80.1)</td>
<td>40(19.9)</td>
</tr>
<tr>
<td>No</td>
<td>76(96.2)</td>
<td>3(3.8)</td>
</tr>
</tbody>
</table>
Based on the tabulation of data, 90.4% of respondents had met with accidents is without attending a driving lessons (P=0.001). Meanwhile, 94.3% of them did not have a driving license (P=0.001) and also met with accidents and 96.2 % of them did not wear seatbelts or helmets (P=0.001).

**Discussion**

Based on our study, the road traffic accidents and injuries can be said one of the leading problem in Muar. This is proven from the data analysis when the 280 respondents answered the questionnaires. Our targeted population are form six students from higher secondary schools. The reason we chose this population is because adolescents are the highest age group that causes road traffic accidents. The sociodemographic results shows that men are the highest gender that cause accidents with a percentage of 90.7% and the leading race is Malays with a percentage of 89.9%. However, the Proceedings of the Eastern Asia Society for Transportation Studies, Vol. 5, pp. 1867 - 1874, shows the females and the non-malays are the highest percentages that cause accidents with 67.1% and 74.4%(Car occupants accidents and injuries among adolescents in a state in Malaysia, 2005)

Out of 280, only 237 of them met with accidents. More than half of the respondents have said that they have met with road traffic accidents and injuries. The participants who met with accidents and injuries are mostly from low family income of 85%. This is because they do not want to spend money on getting a proper knowledge on driving skills and hence do not want to attend driving lessons. When they do not attend driving lessons they do not own a driving license. So there won’t be a fair knowledge on driving skills and this causes them to meet with accidents without proper lessons. The participants who had knowledge on driving from the qualified instructor are less likely to meet with accidents. Immaturity, inexperienced particularly in the necessary driving skills and capabilities were the main reasons postulated(Mayhew, 2002) The Swedish national road traffic accidents showed there were more older people who were license holders as compared to the 19 years old(Murray, 2003). Qualified instructor provides learning to drive and preparing the road test in order to produce safer drivers.

Our study shows that not having driving lessons is associated with having injuries as motorcar occupants. The formal driving lessons among these form six students is quite recent (1-2 years) and that could make them more cautious when they are driving and they avoid from getting involved in accidents. At the same time it also can be a factor whereby less experienced drivers do cause accidents. However, a review of 30 studies from several countries reported that formal driving education did not have low frequency of road traffic accidents. Another review from John Hopkins School of Public Health and the Cochrane Injuries group in the United Kingdom also reported no convincing evidence from undergoing driver education (Mayhew, 2002).

There was a significant association between having injuries as motorcar occupants and not having driving license. There is lack of driving skills and experience among those who did not have driving license and driving lessons. Once a person acquires a driving license in Malaysia they are still on probation for two years before they can receive their normal driving license. Most new probation licensed drivers are more careful as they do not want to lose their driving status and opportunity at an early stage. Seatbelts or helmets effectively reduce serious injuries and deaths. In our study, majority of the students used seatbelts or helmets to prevent from injuries and because it’s a habit, followed by fear of being fined. The reasons given for not using the seatbelts or helmets were driving short distances, forgetfulness, were in a hurry. (Car occupants accidents and injuries among adolescents in a state in Malaysia,

<table>
<thead>
<tr>
<th></th>
<th>Do Not wear</th>
<th>Seldom</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Respondents</td>
<td>76(96.2)</td>
<td>3(3.8)</td>
<td>*0.003</td>
</tr>
<tr>
<td></td>
<td>17(81)</td>
<td>4(19)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>144(80)</td>
<td>36(20)</td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.05
This is similar to our study as well whereby the respondents use seatbelts or helmets to prevent from accident with a highest percentage of 47.7%.

There was a relative significant association between motor vehicle accidents and injuries towards risk factors. In our study sample most of the students sustained from serious injuries. Safety seatbelts or helmets usage was higher in primary enforcement cities of Boston, Chicago, Houston and New York (Wells Jk, 2002). Analysis of national probability sample of the United States 1992, usage of seat belt among 12-13 year, 14-17 year and 18-21 years reported 45.6%, 19.8% and 10.2% respectively (Brener ND, 1998). The fatality rate for the non-users of seatbelts or helmets was six times greater than that of the belt users for all ages in Kuwait. The non-users required more surgeries and received more abdominal and facial injuries (Koushki PA, 2003). A study in New Zealand reported seatbelts or helmets used as a driver (91%), front seat passenger (93%) and rear seat passenger (40%). One of the main reasons given for not using seat belts was ‘not in the habit’ (Begg DJ, 2000).

The current study can be generalized to all form six students in Selangor. However it cannot be generalized for the late adolescents who are out of school or attending private schools who tend to have a different and states of vulnerability towards driving. Being a self-report, there is the possibility of underestimation of road traffic accidents. A prospective study of these students with driving lessons and driving license who later graduate to the outside world would be very useful in understanding further the trends of road traffic accidents and safety practices among young people (Car occupants accidents and injuries among adolescents in a state in Malaysia, 2005).

Conclusion

Our study shows that among the 280 respondents, 237 students which are 84.6% of them had met with an accident. From the 237 students, the most is male students, Malay, and also from a high income family. Our study also shows that there was a significant association between road traffic accident and injuries with not having a driving license, not attending driving lessons and usage of seatbelts or helmets.

Recommendation

Our government should implement strict rules and tough penalties such as increasing fines and summon to curb traffic accidents. Seatbelts and helmets should be made compulsory by law in our country. Disciplinary actions should also be implemented on drivers such as not wearing seatbelt and helmet while on road.

For the awareness, Schools have a role to play by emphasizing the importance on road safety, like usage of seat belts, proper driving practice by organizing awareness campaigns and seminars which is given by road traffic instructors. The media also needs to draw the attention of all road users both to dangers and to safe practices on the road.

Acknowledgement

We as authors are thankful to Asia Metropolitan University lecturers, staffs and friends for helping us to conducting this study. We extend our thanks to the respondents and School Staffs for allowing us to conducting the research in the government setting.

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Impact of Safe Water and Improved Sanitation on Incidence/Prevalence of Typhoid Fever Globally

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Abstract

Typhoid fever is a systemic infection caused by the bacterium salmonella typhi. It occurs worldwide and more in developing countries. This study is a review of existing journals on typhoid fever is aimed to determine whether safe water usage or consumption and improved sanitation had an impact on the incidence/prevalence of typhoid fever globally.

A literature search is carried out reviewing current and existing journals on typhoid fever. From the view, it was noted in most of the articles by various authors that safe water usage and improved sanitation impacted on incidence and prevalence of typhoid fever.

It is however recommended that with implementation of various public health strategies on safe water, improved sanitation and personal hygiene there will be a reduction in the incidence of typhoid fever in our environment.

Vacuration program on Typhoid should be stepped to further curb the high mortality rate from this water borne disease.

Keywords: Typhoid fever, safe water, unproved sanitation.

Introduction

Typhoid fever is a systemic infection caused by the bacterium salmonella enteric serotype Typhi (S. Typhi) John and Gumpet, 2010. It occurs worldwide and more in developing countries. It is a major cause of enteric disease in children in developing countries (Kariuki, 2008). It causes mortality in young adults in their productive life making it a disease with great socio economic impact. (Siddiqui, 1991).

The annual estimate incidence in Africa is about 400,000 cases, giving about 50 cases per 100,000 persons per year. The disease occurs commonly amongst school age children. Siddiqui, 1991 in a study on epidemiology patterns and control strategy, noted that there are 33 million case and 500,000 deaths from typhoid fever, annually occurring globally.

In the developing world, a worldwide incidence is 365/100,00 (0.5%) whilst in countries as Japan and USA with a good reporting system, the annual incidence is 0.24 – 3.7/100,00 population (Eddman and Levine, 1986). Typhoid fever occurs amongst the low and middle income class countries. The transmission of Typhoid fever is by ingestion of food or water contaminated with faces from carriers or expedients or infected persons.

The diagnosed of the diseases lies on laboratory confirmation. Bone mamor culture remains the goal standard diagnostic test. Though blood culture is a less sensitive method than bone manoro culture, blood culture is practically the first choice for patient diagnose. Serologic methods for diagnose still suffered from substantial limitation of both sensitivity and specificity (Muite and Crump, 2010).

Several researchers have carried out studies on the incidence/prevalence of typhoid fever with emphases on how to curb its increase with the employment of strategies as provision of safe water, improving sanitation, improving personal hygiene and vaccination etc. The object of the study is to carry out a literature search on the interest, to reviewing as many articles as possible to see if the impact of improving access, to portable water, improving sanitation with proper sewage treatment could help reduce the incidence of this disease.

Brieman et al., 2013, carried out a comparative study to assess the incidence of typhoid fever in an urban informal settlement and a rural area Kenya, found, a higher incidence in the
urban area in which led to looking into the problems of overcrowding mineral access to safe water and poor hygiene practices. The results of study showed a very high incidence amongst urban children less than 10 years old. These rates are comparable to studies carried out in Asia. Outcome of the study further stressed on use of vaccination coverage problem as a strategy to reduce incidence to typhoid fever.

A review of the burden of typhoid fever in Bangladesh by Mesbah Uddin Ahmed, noted that Typhoid fever is highly endemic in South East Asian countries with about 21.7 million new cases emerging each year. There are 216,000 annual death recorded with about 358 to 1100 per 100,000 annual attack rate. (Bulletin WHO, 2008). Also inferred from this study are risk factors associated with Typhoid fever in rural areas and they are poor sanitation, overcrowding, lack of safe water supply. These have help to design ways of prevention of typhoid fever, such as improvement in public Health Education, early detection and treatment of disease, hand washing, avoid drinking untreated water or eating of raw fruits and vegetable as well as administration of vaccine to high risk group.

Also as earlier noted from 1991 study on epidemiology patterns and control strategy in Typhoid fever, Siddiqui 1991 showed how the Typhoid can be controlled by provision of safe clear water, effective sewage disposal and prompt diagnosis and treatment of patients as well as asymptomatic carriers. In most endured region for typhoid fever, the poor segment of the population usually remains in areas underserved in terms of adequate water and sewage system. When these measures for disease control are enacted it will help to reduce the incidence of typhoid fever.

(Hatta et al., 2009) on risk factor for clinical typhoid fever in villages in rural south – Sulawesi, Indonesia, the author carried out a survey among all household head in five neighbouring villages in rural south – Sulawesi in Indonesia. He went to know the prevalence of typhoid fever and risk factors as demographic and behavioural for having typhoid. About 134 cases of typhoid fever were recorded of which 90% was diagnosed based on Clinical findings.

India pendent risk factors identified were consumption of uncooked vegetables, consumption of water with poor quality, use of water contaminated with coliform bacteria; not washing hands before eating and not using soap for washing hand. The results of this study again showed that absence of clean drinking water adequate sanitation education which focused on simple measures as hand washing and soap before eating or cooking before consumption may contribute to prevention of typhoid fever in rural areas. The building and use of pot toilet and construction of a water supply system should be prioritized to improve the health of the population.

On prevention of typhoid fever, an article posited on Wikipedia encyclopedia reviewed that sanitation and hygiene are important measures that can be taken to prevent typhoid. Typhoid can spread on environment where human faces or urine comes in contact with food or drinking water, and so careful food preparation and washing of hands are important in prevention of typhoid fever. In a similar article published in Microbewiks, on typhoid in China, vaccines were recommended for travelling outside China to US, Canada, Northern Europe, Austrians and New Zealand during epidemic outbreaks. As immunization is not always completely effective, travelers at risk should drink only boiled or bottled water and eat well-cooked food. Adequate water treatment, waste disposal and protection of food from contamination are important public health measurers. Carriers of typhoid according to the article must not be allowed to work as food handlers.

**Methodology**

A literature search outline was carried out reviewing articles that discussed typhoid fever and the impact of water treatment and improved sanitation of prevalence of typhoid. Most of the articles cited were critiqued after review and various findings gotten were discussed.
Findings and discussion

Several years after the United Nation Millennium Declaration in its Eight Millennium Development Goal which stated and stressed the global importance of safe water, improved sanitation and hygiene for development, poverty reduction and health, the incidence of typhoid fever is still on the high side.

The literature noted in a study by Mesbah Ahmed that the incidence of Typhoid fever in Endemic South East Asian countries quoted about 21.7 million new cases occurring each year, with about 90% of this figure occurring in South East Asia, 216,000 deaths are recorded annually with about 358 to 11000 per 100,000 annual attack rate (WHO Bulletin, 2008).

The 1991 study on epidemiologic patterns and control strategies showed a similar high incidence figure. It estimated that 33 million cases and 500,000 deaths occurred annually throughout the developing world. Worldwide incidence was put at 365 per 100,000 and 540 per 100,000 in the developing world. This showed there is a higher incidence of Typhoid fever in the developing world as well as high death rate.

A similar high incidence/prevalence figure was mentioned in an Article posted on Wikipedia on Typhoid fever, showed that in 2010, 190,000 deaths were recorded which was high than the figure 137,000 deaths in 1990 from Typhoid fever.

Most of the studies/literatures reviewed in this literature search noted that poor sanitation, hygiene and absence of clean water contributed to increase in the disease. Overcrowding, eating of raw fruits and vegetable that is contaminated were also implicated as risk factors that causes increase in incidence of Typhoid fever.

Sameen Siddiqui (1991) in his study which supported the above mentioned risk factors noted that in most endemic region for Typhoid fever, the poorer segments of the population usually live in areas underserved in terms of adequate water and improved sewage systems. This study is similar to an article on health impacted caused by poor water and sanitation. The study commented that poor people in most developing countries have a great burden of diseases due to inadequate water supply, sanitation and hygiene.

Prevention of Typhoid fever can be well achieved if most of the risk factors are reversed or well handled. Most of the literature reviewed in this project noted that public health strategies are improvement in public health education, provision of portable water to most communities, stepping up improvement in sanitation, improved personal hygiene, early detection and treatment of cases as well as vaccination coverage in high risk area will have a great impact on reducing the incidence of prevalence/incidence of Typhoid fever.

Conclusion

With implementation of public health strategies on safe water, improved sanitation and personal hygiene, there will be a reduction in the incidence of Typhoid fever in our environment. Government in various countries should be on top gear with the implementation of Millennium Development Goal Eight in order to reduce the high mortality rate from Typhoid fever.

Vaccination programs on Typhoid should also be stepped up to further curb the high mortality rate from this water borne disease.

References

Health Equity: A Challenge and Achievable Goal for Africa

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Abstract

The conditions in which people are born, live, grow and age are important and impact greatly on their health. However, equity is not about sameness but each and every individual deserving the same opportunity concerning health, education, housing, working and living conditions. Health inequities are found worldwide at different levels and stem from various factors. Africans are experiencing health inequity related to the social, economic, cultural and political environment in which they live. Immediate actions, coupled with a good political will substantially reduce the existing gaps and ensure that we achieve health equity in a nearer future.

Keywords: Health, equity, inequity, social determinants.

Introduction

The conditions, in which people are born, live, grow and age are important and impact greatly on their health (1). Equity is not about sameness, but each and every individual deserving the same opportunity concerning health, education, housing, working and living conditions in order to maximize their chances to fully achieve physical, moral and psychological well-being (2).

Globally, the work of the commission of social determinant of health has raised awareness about the importance of acting on factors other than health care and behavior to reduce ill health. Inequities in health are perceptible worldwide, they occur along different axes on the social stratification; including ethnic, socioeconomic, political and cultural factors.

Almost 40 years after Alma Ata, Health for All remains an elusive goal. In the developed world where universal access to health care is a reality and the epidemiological transition has taken place; differences in health outcomes stem mainly from an ethno-racial driver as in Australia and Canada with the aborigines and black American in the USA.

However, in low and middle income countries and in Africa particularly; the epidemiological transition is gradually taking place, infectious and parasitic diseases remain the main causes of death among people (3), infrastructures including health care facilities are lacking in remote and deprived area and where they exist, skilled health care professionals are absents and usually concentrated in big cities (4). The poor-rich health gap is still persisting between and within countries and multiple socio-economic, cultural, political, ethnic and racial factors are influencing differences in health outcomes in developing countries.

This paper examines the different factors (poverty, education, gender, health coverage, gender) that play a role in health disparities in Africa and approaches that can reduce the gap.

Methods

This paper is based on a review of the literature (scientific publications) on health equity in Africa and worldwide, as well as on information gathered from the experience of the author and from grey literature by conducting google research.

The poverty factor

According to the World Bank Organization, one third of people living in extreme poverty are Africans. Such figures are more prominent in countries like DR Congo and Madagascar where almost 80% of the population lives with less than 2$ a day (Table II); out of pocket spending being the most preferred method of payment across the health care system and
social protection is almost non-existent. In countries like Botswana where social services are effective, access to health care services can be hindered by the cost of transport and difficulty of access (5) and the lack of food in the household can be the reason of non adherence to ART (5). Therefore, with a high poverty rate and the strong link existing between poverty and ill health (6); investing in health care alone to prevent the spiral of ill health poverty in the continent will certainly not be enough. Real policies addressing the cause of the causes (reducing unemployment, improve working conditions and wages) led by ministries of health and other stakeholders across governments seem to be the key in reducing health inequities in the continent. Investing the benefit of economic growth in empowering people will lead to more sustainable and continuous growth as this will contribute in producing skilled and competitive main power.

Table 1. Extreme poverty rate in some African Countries, 1981 to 2012

The education and literacy factors

Education is one of the main factor affecting people’s health. Its impact spreads across the continuum of an individual life and of its offsprings; influencing his income, the choices he makes concerning his life and his children too. Education and literacy constitute the base and affect the cognitive of individual making them more receptive to health education messages (7) and are associated with significant reduction in under five mortality (8). According to UNESCO; in Sub Saharan Africa, about 30millions primary school aged children are not going to school and with the lowest literacy rate registered in countries like Tchad and Burkina Faso where almost 80 % are illiterate (9);many lives are prone to ill health. The lack of formal education is strongly associated with high infant mortality (10) and elevated maternal mortality (11). Zimbabwe with more than 90 % of literacy rate (9) can build on a stronger base though literacy does not equate to education.

Education and literacy are key factors in achieving equity between and within countries. Their impact on health outcomes are strong; therefore, efforts (increasing literacy rate and augment primary school intake) should target those two drivers to reduce inequities in health.

Table 2. World Map Literacy of Adult (15+)
The ethnic (Indigenous) factor

Approximately 50 millions of Africans are indigenous (12); from Southern Africa, home to the San passing by Pygmies of Central Africa and Maasais of Kenya to the Tuareg in North and Western Africa; indigenous people have been facing a common fate of deprivation and discrimination from governments and countries’ counterparts. The paucity of data regarding indigenous leads to underestimate their poor health and precarious conditions in which they live. However, without health care access in most cases, mortality among pygmies in Central Africa is higher than national averages (13). In Southern Africa, especially in Botswana where the majority of San resides, infant mortality is higher in rural area where they are the main residents than urban area (14). Moreover, indigenous have been removed from their lands and deprived of their traditional livelihoods and cultures across the continent; such move impacted negatively on the groups’ balance and behaviour increasing alcohol consumption and violence.

Despite different programs such the Remote Area Development Program launched more than a decade ago by the government of Botswana, little has been achieved in uplifting the life of indigenous (15). This results from governments to willingly ignore the ethnic factor; main driver, behind the marginalisation they suffer. Acknowledging that there is a problem and ensuring health inequities are measured within countries is a platform for action (16). Therefore, governments should steward efforts to recognize and assess the conditions in which indigenous lives and take appropriate measures to uplift their lives and integrate them in the mainstream of their respective countries. Such move would ensure a substantial reduction of health inequity across the continent.

The gender factor

Gender inequity affects most social factors associated with health such education, income, literacy, unemployment, power distribution in societies and health care services’ accessibility.

The gender factor plays a crucial role in women health issues such as birth control and sometimes due to the prevailing gender norms and values as well as the distribution of economic resources in the family; they usually face challenges in accessing health care services (17). The gender based inequity is again more prominent in the case of diseases such HIV; seventy-five percent of new HIV infections occur among young girls and female adolescents in Southern Africa (18). Thus, a particular importance should be given to this factor in the path of achieving health equity in Africa.

In 2014, Africa has closed its gender gap to 67% with an increase of 4,8% since 2006(19);such results though encouraging are still insufficient as compared to inequalities registered in male dominant African societies regarding employment, education, income, work and high maternal mortality rates. Acting now on reducing gender inequity across the continent will contribute in improving the life of one of the most marginalized population; healthier mothers will be more educated, will have a higher income and healthier babies with a better education ultimately a more productive working class for the development of Africa.

African governments are more aware than ever about the importance of reducing gender inequities, but there is a need to move from concepts to action in order to achieve health equity.

The health coverage factor

More than 30 years after Alma Ata, accessibility to basic health services remains a far-fetched dream in most countries of Sub-Saharan Africa. In countries like DR Congo, Niger and Central African Republic; the collapse of the health system already weakened by political instability has left millions without accessibility and Non Governmental Organizations are in certain places the only provider of health services. On the other hand; in countries like Botswana and South Africa where people can enjoy a better health coverage, skilled health care professional and quality services are lacking, perpetrating the continuous gap of health equity within and between countries. A fierce example of inequities in accessing quality
health care can be given in South Africa, where most specialists doctors, pharmacists and allied health professionals are tied up in the private sector serving only 16% of the population (4) with approximately R10000 spent per medical aid scheme member while only R1900 was spent per individual dependent on public sector (20). Such discrepancies are also noted between rural and urban area in coverage of key health services such as skilled attendance birth, immunization and diagnosis and treatment of common diseases (21).

Though in both cases, scenarios differ, the results remain identical, health inequity is still palpable in the continent at different levels and hindering people’s chances to achieve their full potential in life. In this context, universal health coverage is becoming a rallying call, with a focus on how best universal coverage can be financed, to ensure financial protection against the costs of ill health and access to needed health care for all (World Health Organization 2010).

Thus researches are needed to find effective and culturally sensitive way of financing and fairly distributing countries health expenditure.

Conclusion

Can Africa as a continent achieve health equity? Given the current situation and approaches used, one would rush to say not today not in the near future but with the potential the continent has and evidences from experiences of others, Africa has a particular opportunity of redirecting its efforts. The unique character of health requires a holistic approach from different components (socio-cultural, economic, political) of the African society through a continental organization such the African union to join efforts and reduce health inequity in the continent. Current isolated efforts directed toward health equity in different countries through gender empowerment and minority based program constitute a crucial step but remain insufficient.

It appears, then, that achieving health equity in Africa is not impossible, but requires a long term process which should be initiated today. Certainly, such efforts will need a systemic and systematic approach (continental efforts involving all African countries and involving sectors other than health between and within countries) as the gaps are across all the sectors of the African Society. Therefore, African leaders should demonstrate their good will and own the stewardship of this movement to implement the reforms needed.

Acknowledgment

The Author thanks all people who participated in elaborating this article.

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Assessment of Healthcare Waste Management Practice in Facilities with Previous Capacity Building on Healthcare Waste Management (HCWM) in Nigeria

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Abstract

Introduction: Health care wastes constitute a small stream of all waste generated by human yet proper disposal of this waste is a great concern because of its hazardous nature. Most developing countries have poor culture of hospital waste management due to competing medical needs and lack of commitment by hospital management. AIDS Support and Technical Assistant Resources (AIDSTAR1) a development partner supported government of Nigeria to build capacity of health care workers in line with World Health Organization (WHO) and national guideline on HCWM. It is expected that this support would yield the desired result of improving HCWM in Nigeria. This study is to assess the level of implementation of national guideline on HCWM in Nigeria.

Methodology: A cross sectional descriptive study was conducted using key informant interview and direct observation of HCWM practices in 5 facilities selected from 3 out of the 6 priority states supported by AIDSTAR1. The guideline on minimum package for HCWM in Nigeria was used as a tool for assessing level of implementation at each health facility.

Results: There was marked improvement in HCWM practices across the facilities compared to only 2.5% of facilities who met minimum standard for HCWM as described in the baseline assessment in 2011. All the facilities had infection prevention committee and all the various types of waste boxes were available and used in the facilities for waste segregation. Wastes were evacuated to points of final disposal even though there were some operational challenges with the process. There was high awareness of the hazardous nature of hospital waste and the need to dispose them in a sanitary manner.

Conclusion: Training of all cadres of health care workers including waste handlers, management staffs, and provision of necessary material for HCWM has lead to improved HCWM in Nigeria. It is hereby recommended that government should ensure that guideline for minimum package of healthcare waste management are continuously implemented in health facilities in line with the national policy on HCWM.

Key words: Healthcare waste management, Hazardous health waste, National healthcare waste management guideline, Healthcare waste segregation.

1. Introduction

Healthcare waste (HCW) is a by-product of healthcare that includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. Even though HCW form a small stream of total waste generated daily, it draws a lot of attention because it contains potentially hazardous substances. According to WHO, hazardous waste make up 20% of hospital waste [1]. Of these 20%, infectious and anatomical waste account for 15%, sharps represent 1%, chemical and pharmaceutical 3% and genotoxic waste, radioactive matters and heavy metal account for the remaining 1%. Poor management of HCW exposes healthcare workers, waste handlers, patients, visitors to the hospital and nearby community to infections, toxic effects and injuries [2]. HCWM is first of all a management issue before being a technical one and therefore completely depend on the commitment of both administrative and political authorities as well as the entire staff within health facilities [3]. In most developing countries because of several competing health need for meager
resources, hospital management may not see waste management as a priority. For the management and the facility staffs to dedicate their resources and time for hospital waste management will depend on how much information they have about the hazardous nature of hospital waste and the need to dispose them in a sanitary manner.

In Nigeria, waste management is a general concern to the extent that some states declare sanitation days as a monthly exercise to emphasize the need for people to clean their environment and commit them at least once in a month to embark on the cleaning of their environment. In the hospital environment where persons are formally employed for the purpose of cleaning the environment, how well this is done depend on how the worker perceive the importance of their task. An important requirement for proper HCWM is the development and implementation of a HCWM plan which requires going through a number of steps and having in mind the different levels of health facilities where it will be implemented. Guided by WHO guideline on HCWM, a 5 years Nigerian national healthcare waste management plan was developed by the national HCWM technical working group [4] This plan together with national policy on healthcare waste management and guidelines were formally approved by the Federal Executive Council in 2012. The Federal Government had in the past made some efforts in the form of provision of high temperature incinerators at tertiary health facilities, which form part of the healthcare policy and strategic plan. The guideline document which should guide the health facilities consist of 10 steps for improving HCWM in Nigeria. The steps includes: 1) raising awareness of the problem especially amongst policy makers; 2) develop a Policy on HCWM that define the rational for HCWM and what should be achieved; 3) setting up a strategy which is basically stating what steps must be taken to achieve the objectives that have been listed in the policy; 4) conduct an assessment of the current situation using for example the WHO rapid assessment tool; 5) draft a HCWM Plan that should contain a national action plan using for example the WHO general guidance document; 6) consolidate the legal & regulatory frameworks; 7) standardize HCWM practices in line with the national guidelines; 8) strengthen the institutional capacities both human and financial resources; training, etc.; 9) set up waste management plans at all relevant levels and 10) establish a monitoring plan.

Aware of the numerous challenges with HCWM in Nigeria and in line with WHO recommendation [5] on the core principles for achieving safe and sustainable management of health-care waste that donors and partners should include a provision in their health program assistance to cover the costs of sound health-care waste-management systems; and that to achieve acceptable practices in health-care waste management, all managers and other personnel must receive appropriate training. In 2011, AIDSTAR-1 a United State Agency for International Development (USAID) funded project, supported a baseline assessment in five priority states to determine the status of HCWM practices in Nigeria [6].The assessment found that few facilities have policy document to guide health care workers in safe medical injection and waste management services. In 72.1% of the facilities, sharp containers were not available in every corner where injection took place. 86.2% of waste handlers had not been trained in safe handling of medical waste. One third (33.8%) had no protective equipment. Sharps in open containers were found in 31% of the facilities. Majority of the facility used unsafe disposal methods. Only two facilities met the requirement for a minimum package for health care waste management consisting of proper waste segregation; storage in a locked area; treatment using medium or a high temperature incineration, dumping in a protected pit, or transportation for offsite treatment; disposal in an ash pit if onsite high temperature incineration was used. The study recommended that government should provide national guideline and other policy document on health care waste management to all facilities, train all cadres of health care workers on injection safety and HCWM, provide personal protective equipment and institute procedures for sharp waste management. Other previous study in Nigerian has also shown poor awareness of hospital waste hazard and its management among workers [7] the study recommended training of health workers staffs to create awareness on wastes, the hazards and existing guidelines and various forms of treatment for waste. Another
study [8] showed that even when knowledge of healthcare waste management was high, the practice was not adequate.

The findings from the baseline assessment lead to setting up the national technical working group who developed the national guideline on HCWM. Also AIDSSTAR-1, a USAID funded implementing partner through President Emergency Plan for AIDS Relief (PEPFAR), embark on series of training for health facilities across the country as well as providing policy documents and seed stocks of waste collection bins in line with the national guideline. The following was the steps taken to implement HCWM at the various facilities by the organization; 1) advocacy to the selected facilities 2) conduct baseline assessment to know the status of HCWM in the facility; 3) train health care workers, waste handlers and store keepers on HCWM; 4) provide policies and guidelines on hospital waste management; 5) provide materials for waste management e.g. covered pedal bin/liners, wheel bins, aprons, gloves and boots, safety boxes for sharps. The facilities were also provided with list of vendors from where they can get the materials if they ran out of stock. To determine whether the facilities were meeting the minimum HCWM standards, there was a routine supportive supervision to the health facilities after the training using the supportive supervision check list. The facility must respond yes to all the observations variables on the minimum package for HCWM for it to be counted as meeting minimum standards for HCWM; The minimum standard/package for HCWM are: 1) Formation of a viable, functional sustainable Infection Prevention Committee (IPC) that meet regularly, 2) Availability of HCWM Plan (Integrated or standalone) 3) Waste Segregation at source, 4) Waste handling during transportation with the use of Personal Protective Equipment (PPE), 5) Internal transport from point of generation to storage point using wheel bins, 6) A secured storage point, 7) Standard treatment of waste, 8) Final disposal in the manner that is safe. Depending on the level of facilities, the minimum requirement differs in the area of formation of infection control committees and type of final disposal system. While a tertiary hospital and secondary health facilities must have a functional infection control committee at the primary health facilities, a focal person for infection control is sufficient. Also in the area of final disposal, tertiary hospital and secondary hospital are expected to have incinerator and an ash pit or sanitary landfill offsite. Both secondary and primary health facility at the minimum should have a designated burial pit that is well protected from both animal and man. This study is set to assess the impact of the capacity building by AIDSTAR-1. It was believed that the training would improve the practice of HCWM practices across facilities to be able to meet the minimum standard for national guideline on HCWM.

1.1 Objectives

Overall objective was to assess the level of implementation of national health care waste management guideline among the facilities that received capacity building on HCWM services by AIDSTAR-1

1.2. Specific objectives

1. To determine the level of compliance of the facilities with national guideline on HCWM set out by the national technical working group
2. To determine if the facilities meet the standard for health care waste management
3. To determine unsafe practices that could predispose to nosocomial infection, environment pollution and community infection.

2. Methodology

The study was carried out in 3 states out of the 6 priority states where AIDSTAR1 provided capacity building to health facilities on health care management.
2.1 Study design

A cross sectional descriptive study was conducted with key informant interview and facility walk-through to observe practice of health care waste management in the facilities

2.2 Sampling technique

The package for HCWM differs from level of facilities therefore, in selecting the facilities to be visited, it was mandatory that all levels of facilities supported are represented namely: tertiary, secondary and primary health facilities. Through a multistage sampling, 3 states were randomly selected from the 6 priority states supported by AIDSTAR-1. In the 3 states, a total of 9 facilities were supported by AIDSTAR1 for HCWM services out of which 5 were randomly selected.

2.3 Data collection method

Data was collected through key informant interview and direct observation during a facility walk through. In all the facilities visited, a designated head of infection control committee or the secretary were interviewed on what steps have been taken to implement minimum package for HCWM in the facility using the government guideline. After the interview, a facility walk through was conducted through some of the departments or units in the facilities associated with high activities that could generate waste. The departments and units include; emergency area, wards, theatres, laboratories, ANC & and child welfare clinics. During the walk through it was observed if waste are segregated at source, presence of safety boxes for sharps, minimum of Black and Yellow or Red Covered Pedal Bin/Liner, use of rubber gloves, boots & face mask for waste handlers, and for incinerator operator, if there were respirator, boots & heat resistant gloves; designated routes for Wheelie Bins, Secured space or location not accessible to unauthorized personnel for storing filled safety boxes prior to treatment or transportation, autoclaving high temperature incineration with emission control, high temp incineration medium temp incineration burn and bury in a protected pit, bury in a protected pit without burning, off site treatment, ash pit/landfill (if final disposal is on-site and using a high temperature incinerator) and burial in a protected pit.

2.4 Ethical consideration

Prior to the field visit, the state ministry of health was contacted on the planned assessment that gave approval and agreed to be part of the visit. The hospital managements were informed who equally gave their approval. The infection control committee in each of the facilities equally gave their approval and agreed that the chairman and/or the secretary of the committee should grant interview.

2.5 Study limitations

1. Only very few facilities were covered during the study
2. Interview was only conducted among the chairman or secretary of IPC

3. Results

The study was conducted over 2 weeks with visit to the 3 selected states. In each facility, either the chairman or the secretary or both of infection control committee were interviewed followed by facility walk through to observe practices related to HCWM. Below are the findings:

| Table 1 Characteristics of facilities visited by level of health services |
|-----------------------------|-----------------|-------|
| Level of facility          | Frequency | (%)  |
| Tertiary                   | 1         | 20   |
| Secondary                  | 2         | 40   |
| Primary                    | 2         | 40   |
| Total                      | 5         | 100  |
Five facilities were visited out of which 40% were secondary, another 40% were primary and 20% tertiary health facilities

**Table 2** Types of waste generated by level of health facilities

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Types of waste</th>
<th>General waste</th>
<th>Hazardous waste</th>
<th>Dangerous waste</th>
<th>Chemical waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tertiary</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

All the 5 facilities visited were generating general and hazardous waste except a primary health facility that generate only general waste

**Table 3** Existence of infection prevention committee by level of facilities

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Existence of IPC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
</tr>
</tbody>
</table>

All the facilities visited had infection prevention committee except a primary health facility that did not have any committee but represented by a focal person on infection control

**Table 4** Availability of annual HCWM plan

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Existence of HCWM plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Tertiary</td>
<td>-</td>
</tr>
<tr>
<td>Secondary</td>
<td>-</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
</tr>
</tbody>
</table>

The table shows that none of the facilities visited had an annual health HCWM plan

**Table 5** Uses of waste bin by level of facility

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Type of waste bins</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Safety boxes (%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5 (100%)</td>
</tr>
</tbody>
</table>

The table shows that all the facilities visited had different types of waste bins for waste segregation. All the facilities had safety and black bin but one primary health facility did not have yellow nor red bin while only one secondary facility (20%) had all the boxes including brown box.
Table 6 Use of personal protective equipments by waste handlers

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Use of personal protective equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5 (100%)</td>
</tr>
</tbody>
</table>

In all the facility visited, PPEs are available and used during evacuation of waste from service point to storage point and during the process of transportation for final disposal.

Table 7 Mode of transportation of waste within the facility

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Mode of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use wheel bin (%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>4 (60%)</td>
</tr>
</tbody>
</table>

In the teaching hospital and secondary facilities, wheel bins were used for transport of waste from point of service to a temporary storage location.

Table 8 Availability of a designated room for storage of waste before disposal

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Type of storage facility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Waste stored in designated room (%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>1</td>
</tr>
<tr>
<td>Primary</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>4 (80)</td>
</tr>
</tbody>
</table>

Eighty percent of the facility visited had a designated room where wastes are temporary stored before final disposal. Only in one secondary facility (20%), wastes are move from point of service to final disposal.

Table 9 Location of treatment of waste by level of facility

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Type of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Onsite incinerator and burning of general waste (%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>-</td>
</tr>
<tr>
<td>Primary</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>2 (40)</td>
</tr>
</tbody>
</table>

Only two (40%) of the facilities visited had functional incinerator within the premises, another two (40%) had offsite incinerator while one (20%) of the secondary facilities practiced sanitary land filling.
Table 10 Summary finding of minimum package of HCWM by level of facilities visited

<table>
<thead>
<tr>
<th>Guideline on minimum package of HCWM</th>
<th>Lagos State</th>
<th>Bauchi State</th>
<th>Cross River State</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General hospital</td>
<td>Primary health care</td>
<td>Teaching hospital</td>
</tr>
<tr>
<td>Type of waste generated</td>
<td>General, hazardous and chemical wastes</td>
<td>General waste</td>
<td>General, hazardous and chemical wastes</td>
</tr>
<tr>
<td>Formation of IPC</td>
<td>The hospital has a 7 man infection prevention committee which meets once in a month to discuss on issue of infection prevention.</td>
<td>Nil</td>
<td>Infection control committee in place Committee holds meeting monthly. Membership cut across all hospital departments...</td>
</tr>
<tr>
<td>Availability of HCWM Plan</td>
<td>No annual plan on HCWM</td>
<td>No annual plan on HCWM</td>
<td>No annual plan on HCWM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handling Use of PPE</td>
<td>Waste handlers in the hospital have heavy duty gloves, face mask, apron and booths that are used during handling of wastes</td>
<td>Waste handlers in the hospital have heavy duty gloves, face mask, apron and booths that are used when handling wastes</td>
<td>Waste handlers in the hospital have heavy duty gloves, face mask, apron and booths that are used when handling wastes</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Internal transport</td>
<td>Waste is wheeled using wheel bin to storage point before final disposal</td>
<td>Waste is wheeled using wheel bin before final disposal</td>
<td>Waste is wheeled using wheel bin before final disposal</td>
</tr>
<tr>
<td>Storage</td>
<td>A room constructed with lock and key which is not accessible to unauthorized personnel. Safety boxes are kept prior to transportation for final disposal.</td>
<td>Filled safety boxes kept in the store prior to transportation for final disposal.</td>
<td>One room in the psychiatric ward was designated to keep shapes before incineration</td>
</tr>
<tr>
<td>Treatment</td>
<td>Off site treatment</td>
<td>Off site treatment</td>
<td>Have incinerator within where sharps are burnt</td>
</tr>
<tr>
<td>Disposal</td>
<td>The hospital has a dump site where wastes are kept before transportation to the final dump site for incineration. The dump site in the hospital has no door or lock to keep unauthorized people from throwing things into it.</td>
<td>Lagos Waste Management Authority (LAWMA pick waste from the PHC but most times this does not happen In such condition, sharps waste are sent to another facility for</td>
<td>Has incinerator where all sharps are burnt. Also have a dump site where other wastes are dumped before it is burnt or packed by State Environmental Agency. The Agency packed the waste fortnightly. Also cosmopolitan waste management organization is contracted to clean the</td>
</tr>
<tr>
<td>incineration. The back of the PHC is used to burn general waste.</td>
<td>hospital.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Discussion

The level of implementation of national guidelines on healthcare waste management as prescribed by the national technical working group was described in this study. The study found some level of improvement over the findings from the baseline assessment in 2011 by AIDSTAR-1, even though there are variations in terms of compliance with all the steps. Compliance to the guideline largely depends on the willingness and commitment of both the facility management as well as the staff to implement the HCWM intervention strategy. Various cadres of the hospital staffs ranging from management through clinical staffs and the waste handlers were trained. Seed stocks of necessary materials like the various bin liners, and in some cases support to the facility to own and run an incinerator. All the facilities generate both general and hazardous waste which must be disposed in a sanitary manner in line with international practices since no waste is completely human friendly. Some of the facilities practiced onsite incineration and burning of general refuses. Use of medium or high temperature incineration is a common technique for treating waste, as it can reduce waste mass by 70% and volume by up to 90%, as well as providing recovery of energy from waste to generate electricity [9]. However, Incineration does not solve the problem of waste as the final product is converted into an ash that contains some of the most toxic concentrations of substances, such as dioxins, and heavy metals. The generation and safe disposal of this toxic waste is very problematic as pollutants from landfill sites have been known to seep out, polluting local water sources, and once they contaminate the water table, their removal is considered to be almost impossible. The EU Commission has stated that final waste from incineration may be one of the most important sources of dioxins in the future. [10] Also the emission from incineration contain large amount of particulate matters that have been associated with cardiovascular and respiratory morbidity and mortality while the heavy metals in the emission have been associated with carcinogen. Burning of refuse within the hospital constitute hazard to both the patients and people living in the environment. Plastics made from chlorine or fluorine is halogenated plastics that give off dioxin when burnt. Dioxin is a known human carcinogen and the most potent synthetic carcinogen ever tested in laboratory animals. Dioxin is about 10,000 more potent carcinogens than the next highest chemical carcinogen di-ethanol amine [10]. The effect of these substances may be slow but its long term effect is very devastating. In Nigeria Ogbonna et al in 2012 [11] documented that huge quantities of general wastes in hospitals are plastics, a pointer to hazard experience when these waste are burnt within the hospital environment. It is also documented that improperly disposed hazardous health care waste like syringes and needles in the absence of sterilization can cause infections of Hepatitis B, C and HIV. Abah and Ohimain, 2011[12] documented that chemical waste poses indirect risks to humans through direct environmental effects by contaminating soil and ground-water. This also collaborate the study by Ogbonna et al 2007 [11] who stated that environmental contamination by waste is worsen by the fact that when untreated wastes are beaten by rain they may be washed into the drainages, rivers, streams and other waters thus endangering human and aquatic lives.

Various bin liners were available in all the facilities visited except for brown bin liner that was only found in one of the facilities. The availability of the bin liners enables waste segregation at point of services. Non-separation of hospital wastes endangers scavengers and waste handlers in addition to the exposure of wild animals such as birds, flies and rodents that facilitate the spreading of germs from infectious medical wastes to nearby environments. The practice of waste segregation as observed in this study is an improvement over previous findings in Lagos by Olubukola [13] who described that HCW management practices in two general hospitals in Lagos was marred by poor waste segregation practices as well as lack of instructive posters on waste segregation and disposal of general wastes. Segregation of wastes according to Ndidi et al.(2009) [7] and Abah and Ohimain (2011) [12] would result in a clean solid waste stream which could be easily, safely and cost effectively managed through recycling, composting and land filling. However, the absence of brown bin liners from most of the facilities means that more need to be done to ensure all necessary bins are available at
point of services. Brown bin liners are use for collection of pharmacy waste. Its absence means that pharmacy wastes are mixed with other waste and may be disposed inappropriately.

Despite the support given to the facilities, none of the facilities had HCWM plan. Lack of HCWM plan is an indication of poor management commitment. HCWM plan is required to analyze the effort made by the facility to implement the minimum package of HCWM guideline. Such analysis will identify gap in implementation and will guide management plan towards achieving full implementation. Related to this was lack of national plan of action and strategic plan at the facilities. These strategic documents are to guide facility specific plan of action. The documents were approved by the federal executive council in 2013 and it is expected that by 2015 these document should be available at health facilities. The situation here is similar to the finding during the baseline study where about 80.6% of the facilities did not have any national policy or guidelines.

A good observation that was made during the study was the existence of IPC in all the facilities visited. Depending on the level of facility, an infection prevention committee is recommended for a larger hospital while a focal person may be designated in a primary health facility. In the baseline survey, only about 22.3% of all the facilities had infection control committee. The existence of a committee whose sole function is to ensure that hospital waste are manage in such a manner to remove or reduce hazards associate with healthcare waste management is commendable. The committee meets regularly to review issues around waste management in the facility and make recommendation to management. In one of the primary health facility, community members were involved in the committee. The involvement of community member in the IPC emphasizes the need for people living around the facilities to be aware of the dangers of hospital waste.

The study also revealed that waste handlers are provided with the necessary equipment for self protection from contamination with hazardous hospital waste. The base line assessment showed that about 34% of waste handlers did not have PPE. In this study, PPE are provided by the health facilities and this was also observed during the facility walk through. Both the waste handlers in the facilities and those responsible for final disposal were provided PPE. Handling of hazardous waste without appropriate PPE predisposes waste handlers to risk of nosocomial infection such as HBV, HBV and HIV.

Wheel bins are recommended for transport of waste from point of service to store where they are temporarily stored before final disposal. The use of wheel bin is a hygienic method of waste transportation. In one of the facility visited, waste bin is still being carried by handlers to the point where they are stored. This practice may result to contact with hazardous agent. Effort should be made by the management to provide wheel bins in such facility. Also none existence of a temporary location for storage of waste (as observed in one of the facilities) before final disposal may mean that waste will remain at point of collection for longer time before they are removed.

Despite the sites meeting the minimum standards, there are some operational issues that must be addressed in order to harness the full benefit of hospital waste management. Some of the bins used in the wards have no liner in them because the available bins were bigger than the bins. The lack of bin liner will make evacuation of waste from the bins difficult and may predispose handlers to contamination. In this same facility, the way to the incinerator was bushy and water logged which makes it difficult for waste handlers to carry out the incineration as at when due. In another facility, one of the urban trucks was stocked in the mud during an operation thus there was no subsequent collection of refuse from that facility. Yet in another facility, the dump site in the hospital had no door or lock to keep unauthorized people from throwing things into it. This will allow scavengers access to the dump site with the attendance risk. The pit for dumping and burning of wastes in one facility was filled up with waste littering around. Because the pit was already filled up, subsequent wastes were dumped indiscriminately around the pit. These unsafe practices are associated with various forms of hazards. Waste management and treatment options should first protect the healthcare workers and the patients and minimize impacts on the environment [11]
5. Conclusions

The current Healthcare waste management is an improvement over the situation that existed as at 2011. However a lot need to be done especially from the management point of view in order to reap the full benefit of healthcare waste management. The wide spread application of this study is limited owning to the small sample size and the narrow scope of the study. A larger sample size that cut across more states and interview that also includes facility staff and waste handlers may give a better insight into the implementation of minimum package of HCWM in Nigeria.

6. Recommendations

1. Healthcare waste management plan did not exist in any of the facility. This is an indication of the level of commitment by the hospital management. For a successful healthcare waste management, each facility should develop a plan base on the national policy and guideline for HCWM and commit resources that enable smooth running of HCWM.

2. Some operational and logistic challenges were identified during the study. This again point to level of commitment by the hospital management. It is not enough to identify a location for storage and disposal of waste but these must be maintained. When refuse pit is filled up or there are no available trucks to evacuate waste to final disposal site, the waste will continue to pose hazard in the hospital.

3. Burning of refuse within the hospital or use of incinerator without emission control poses a lot of risk to patients, visitors and the people living in the hospital environment. All facilities must identify an offsite location for burning of general waste and all incinerators must have emission control. Alternative to incineration are now available such as use of autoclaves, microwaves and stream treatment integrated with internal mixing and chemical treatment. These newer method of disinfection are safer.

4. Routine monitoring of implementation of minimum package for HCWM is highly recommended by the members of the infection prevention committee. Also from time to time state ministry of health or even the federal ministry of health in collaboration with environmental protection agencies should conduct external supervisory visit to facilities.

Acknowledgement

My greatest thanks to God almighty for his guidance and re-direction of the course of my knowledge I wish to acknowledge the immense support I got from Dr. Chidima Anyanwu whose encouragement enable me to decide for this course. My special gratitude to Dr. Kalo Obasi whose lecture stimulated my interest to carry out this study on environmental health

7. References

Exploring the perception of women attending Nyagatare Health District, in Rwanda on abortion as one of family planning methods

Article by Desire Urindwanayo & Charlotte Engelbrecht
University of KwaZulu-Natal, South Africa
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Abstract

This paper is focusing on abortion issue in Rwanda particularly the view of population living in Nyagatare District to the abortion. In this study, a quantitative descriptive design with a positivist paradigm guided the whole research process. Two levels of sampling were done. The first was random sampling for the selection of healthcare centres where five healthcare centres were selected out of a total of eighteen. The second level was probability sampling with a systematic strategy, which was used to select the participants at healthcare centres. A total of 137 women volunteered to participate in the study and completed an anonymous questionnaire. The authorisation to carry out the research was obtained from Nyagatare District and five healthcare centres. The research was approved by the University of KwaZulu-Natal Ethics Committee. The gathered data were analysed using SPSS version 19. Among participants 12.4% wish to use abortion as family planning method. The views on abortion remain different among people.

Keywords: Family planning, Abortion, spacing of births, abortion and family planning

Introduction

Some people see abortion as killing, while others view it as part of a family planning method. Worldwide, abortion is used by 63% of women and is now available on request for about 40% of women (Bristow, 2010). Family planning is a service used to regulate the growth rate in low-, middle- and high-income countries. Many studies show that population growth is of concern for low-, middle- and high-income countries in terms of the high rate of infant mortality and maternal mortality (Thaxton, 2007; Jones, 2008; Casey et al., 2009). This impacts on the development of the countries and does not allow the achievement of socio-economic goals as well as the Millennium Development Goals by the year 2015 (Do, 2009). Family planning is one of the solutions that can be used to address population growth. In addition, family planning is a central feature of life and health for women all over the world (Griggs, 2009). In Rwanda, the Millennium Development Goals of 2010 showed that 27% of the people in the country are currently using contraceptives (Abbott and Rwirahira, 2010). There are two types of contraception: modern and natural. Modern contraception methods can be categorised in several ways. Hormonal methods include oral contraceptives, patches, vaginal rings, intramuscular contraceptives, implants and levonorgestrel intrauterine devices. Non-hormonal methods include male and female condoms and other barrier methods, as well as copper intrauterine devices. Implants and intrauterine devices, and sometimes intramuscular contraceptives are also categorised as long-acting, reversible contraceptive methods. Surgical sterilisation is a permanent method of family planning (Tsui, McDonald-Mosley and Burke, 2010) and abortion is classified with modern one. Natural method includes abstinence, withdrawal (fertility awareness, outer course), and continuous breastfeeding (lactationalamenorrhea method) (Stacey, 2008). As a result of this, the researcher was interested to know how the population of Nyagatare District sees abortion in right of family planning method.

The following sections are literature review on abortion; methodology used to gather information regarding family planning, as well as results from respondent to the abortion.
Literature review

Abortion is considered differently in different societies in the world. Some people see abortion as killing, while others view it as part of a family planning method. Worldwide, abortion is used by 63% of women and is now available on request for about 40% of women (Bristow, 2010). Rwanda is one of the countries that consider abortion as killing. Ndikubwayezu (2009) and Nambi (2009) state that Rwanda is still listed as one of the countries where abortion is illegal and punishable under the penal code. However, abortion recently accounted for 50% of women who die from reproductive health complications. Despite the fact that abortion is illegal in Rwanda, the results of a study by Basinga, Moore, Singh, Audam, Carlin, Birungi and Ngabo (n.d.) showed that 10 out of 1000 women aged 15–49 were treated for complications of abortion in health facilities. In health facilities, women are admitted when they experienced complications due to the incomplete or poor practice of these illegal abortions. Many of these women reported too late for assistance due to possible shame of what they did and fear of being prosecuted. If it is legal, they may come when they notice that fertilisation had occurred. This might be an indication that the number of unsafe abortions in Rwanda is even higher when it includes women who do not experience complications and women who experience complications but do not access health services (Basinga, Moore, Singh, Audam, Carlin, Birungi and Ngabo, n.d.). Mutesi (2011), a journalist, reported two cases of women arrested for abortion in Rwanda in 2011, where one of them said that she decided to abort the foetus because the man responsible had abandoned her. The second one said that she did it because it was an unwanted pregnancy. In contrast, abortion in South Africa is legal. If unintended pregnancy is assumed, the last resort is to terminate that pregnancy. In Rwanda, abortion is legal when the life of the mother is compromised or when medical examinations show that the foetus has abnormalities that would make it impossible for the baby to survive after his/her birth Mutesi (2011).

The same issue was reported by De Mora (2011) in Uruguay that abortion is not allowed but they count around 30000 cases every year for unsafe abortion. The study done by Fleissing (Furedi, n.d) estimated that 310000 accidental pregnancies occur every year in Britain which may exceed this number as the Author did not include those who conceived and died abortion; and the same Author affirmed that the abortion is the most solution to the unwanted pregnancy. As Canadian Abortion Facts states, in Canada, abortion is legal and 96% of abortion is done as buck-up to birth control as Canadian Abortion facts stats (Campaign Life Coalition, 2009), even this act is funded. However some Canadians complain on the money that is used to kill unborn babies.

The anti-abortion activists, Dorenbos and Van Vuuren (2003) are outspoken when they argue that, when considering human rights, an abortion is discrimination against the life of the unborn child. These authors add that the life of a human being is now lower than that of an animal when one takes into account how an animal is respected. If any animal species is in danger the world hastens to secure it; human beings, however, are cruelly and torturously killed in their mothers’ wombs. This is remarkable when one considers the activity of an organisation such as Greenpeace who swiftly become active to save the world’s endangered species (Dorenbos and Van Vuuren, 2003). The researcher is in agreement with those authors because life starts with fertilisation and continues till the person dies. In the fight against abortion, we may educate the community about the emergency contraceptive methods. We believe that such cases occur unwillingly, but with enough knowledge of family planning methods, we could reduce the rate of abortion.

The fact that the human foetus is not easily seen, weak and vulnerable is no reason to override or ignore its right to life. Because of the mental and physical immaturity of a child, care and protection is needed before as well as after the child is born. A woman’s life is considered more precious and worthy than that of the foetus without any thought for the unborn innocent human being. Women have the same rights as other people but these are often seen to be in conflict with those of their unborn children as stated by Human Rights (n.d). We may not ask for rights as well as justice for ourselves while taking away the rights
of those who are most dependent and innocent. In trying times of dealing with an unwanted pregnancy, society should empathise with women as well as their unborn children, supporting them during this period so that they do not feel abandoned and alienated. The beginning of life starts at conception. None of us has an utter right to control our bodies as many abortion-rights activists proclaim. This society plays a very significant role in sustaining and saving life. Society forbids us to use our bodies to harm others or to harm ourselves. A woman does not have the right to kill or to cause harm to the unborn baby living within her womb (Human Rights, n.d.). It is not acceptable, in other words, for one individual to trade off the life of another person against his or her proper social, health or economic welfare. The only case when one life can be taken legitimately is when another life is stake (Human Rights, n.d.).

**Methodology**

In this study, a positivist paradigm (Weaver and Olson, 2006) was used with deductive logical reasoning. This paradigm makes the assumption that there is an objective truth existing in the world that can be explained and measured scientifically (Matveev, 2002). The data from the participants was objective truths that existed among them and which can be explained and measured scientifically. The researcher was separated from entities who were the subjects of observation.

The researcher used a quantitative approach (Burns and Grove, 2005; Moule and Goodman, 2009) that allowed him to count and measure events and perform a statistical analysis of the body of numerical data. This allowed the researcher to generalise because the measurement was valid and reliable (Alasuutari, Bickman and Brannen, 2008). This approach was used because the data collected using the quantitative approach was clear and very precise and lacked ambiguity (Gilbert, 2008).

For this study, a descriptive (Keele, 2011) quantitative approach (Burns and Grove, 2005; Moule and Goodman, 2009) was used in order to understand the phenomenon under investigation. The descriptive study was chosen for this study for the simple reason that it afforded the researcher the opportunity to gain more information about the characteristics of the topic of interest (Keele, 2011).

Nyagatare District was the setting for this research. Nyagatare District is situated in the eastern province of Rwanda, bordered by Gicumbi District on the western side, Tanzania in the east, Uganda in the north and Gasabo on the southern border. Nyagatare District has 630 villages (Imidugudu), 106 cells and 14 sectors. The district occupies 1741 km² of land and is inhabited by 291,452 people. The population density is 321 inhabitants per km². Nyagatare District has one hospital and 18 health centres (Nyagatare, Rukomo, Mimuli, Gatunda, Gakirage, Nyakigando, Cyondo, Muhambo, Nyagahita, Tabagwe, Ndama, Karangazi, Muhambo, Bugaragara, Kagitumba, Muriri, Rurenge and Kabuga) (DCDP, 2007).

The population of the study was women of productive age (18–49) living in Nyagatare District, Rwanda. The total population under study was 455 of those using family planning and antenatal clinics at five selected health centres (Rukomo, Rurenge, Bugaragara, Mimuli and Nyagatare). After selecting the health centres, the researcher contacted each health centre to obtain the overall number of people who come in for antenatal and family planning services. The total number found was to be 455, which made up the population size for the study.

The sample selection was performed by selecting the setting as well as selecting the participants in the study. For the selection of the setting, the research was conducted at five health centres functioning in Nyagatare District. These health centres represent 30% of all health centres in Nyagatare District, which is an acceptable number for the generalisation of the findings. The selection of health centres in Nyagatare District was made by way of simple random sampling. The researcher obtained a list of all the health centres as the site of research, allocated numbers to each health centre and then put the numbers on separate slips of paper. The researcher deposited the slips of paper in a suitable container (bowl). Thereafter the researcher pencilled in a slip and made a note of its number, and replaced the piece of
paper, shook the bowl and selected a second, and a third, and so on until five had been selected. This is called the fishbowl technique (Brink, 2006). In this technique, all health centres had an equal chance of being selected each time because the researcher replaced the previous slip selected. For selection of participants, a sample is a subgroup of the population of a researcher’s interest (Kumar, 2005). At the health centres, the probability-sampling approach with systematic strategy (Brink, 2006; Kahl, 2011) was used. During the data collection period, the researcher chose women of reproductive age (18–49) who were present at health centres for family planning and antenatal services by selecting every third person. Interval (K=3) is calculated by dividing the population by the sample size.

The sample of this study was 137 participants from five health centres in Nyagatare District. The sample was obtained from 30% of the study population.

To reach this sample size, participants were selected according to inclusion and exclusion criteria. The criteria that were used were the following:

**Inclusion criteria**

The following women were included:

All women attending family planning and antenatal services in the age group 18–49 years old were included in this research; women attending family planning and antenatal services, who were willing to participate in research; and; women attending family planning and antenatal services, who were willing to sign the informed consent.

**Exclusion criteria**

Individuals with mental disabilities were excluded because of their vulnerability and inability to make decisions on their own; women younger than 18 years were excluded from the research because they were minors; women older than 49 years were excluded from this research because they were not of child-bearing age; women who were not living in Nyagatare District could not be part of the research; and woman who participated in the pilot study could not take part in the research.

**Data collection**

In this sub-section, the focus will be on data collection techniques and the data collection instrument.

The researcher used a self-report questionnaire (Brink, 2006) to collect the data. This technique is used to explore participants’ beliefs, knowledge and thoughts on contraceptive methods they use. The same author stated that this technique is the most effective method to obtain such information, namely to direct questions at the individuals concerned. It took approximately 20 minutes to complete the questionnaire.

This study used a self-report questionnaire. A questionnaire was designed by the researcher based on the tool used by USAID (Undie and Rama Rao, 2010).

This tool was used for the contribution to global knowledge where the main aim was to prevent occurrence of pregnancy. The section modified is the section about family planning (Undie and Rama Rao, 2010). The questionnaire comprised of six sections, namely Section A: socio-demographics; Section B: perception of family planning; Section C: information source; Section D: family planning methods; Section E: reproduction; and Section F: abortion.

The questionnaire was designed in English and then translated into Kinyarwanda for participants who could not speak or understand English, thus allowing them to answer in their mother tongue. The translation was made by three Rwandan students, and then all translation were put together in order to agree on the proper, unambiguous words to use. After agreement, the final version was typed by researcher.
Validity and reliability

Validity is the way to illustrate whether the instrument is really measuring what it set out to measure or intended to measure as this shows whether the results are true. Validity is an indication of whether the research truly measures that which it intended to measure or how truthful the results are (Golafshani, 2003; Twycross and Shields, 2004; Gerhardt, 2004; Polit and Beck, 2008). Content validity is used to show the readers how the tool responds to the objective of the research interest. Twycross and Shields (2004) point out that content validity demonstrates whether the tool appears to others to be measuring what it says it does.

Reliability is dependability and consistency of a research tool used to measure a variable (Brink, 2006). There are many types such as internal consistency, stability and equivalence (Considine, Botti and Thomas, 2005). In this study, the instrument was tested and retested during the pilot study of ten women of productive age (18–49) who did not participate in the final data collection process of this study. The pilot study is an important stage for every new survey instrument. The pilot study is a small-scale preliminary study conducted before the main research with the intent to check feasibility of the instrument and to avoid waste of money and time as a result of inadequately designed research, as argued by Haralambos and Holborn (2000).

Data collection procedure

The researcher recruited one nurse at each health centre to assist with data collection. The researcher selected a qualified nurse who understood the questionnaire as intended by the researcher. Trained nurses helped participants who could not read to fill in the questionnaire. Participants dropped the completed questionnaires in boxes that the researcher made available during data collection. It took around 20 minutes to fill in the questionnaire.

The data was collected over a period of three weeks by the researcher and one nurse from each health centre assisted. The researcher then collected all the answered questionnaires from the health centres.

Data analysis

The data was analysed using the Statistical Package for Social Sciences (SPSS), version 19.0. To make data capturing and auditing easy, the data was coded. Descriptive statistics, such as frequencies and percentages, was used to synthesise the data. Basic statistics and frequencies were considered and are presented in tables or figures.

Ethical consideration

Ethical principles (Brink, 2006) have to be adhered to in all research done by students, staff or other persons. Cautious consideration to ethical issues were taken into consideration because we reside in a world with multifaceted interactions that have an impact on the health and wellbeing of the population of all nations regardless of individual or national prosperity (Harrowing, Mill, Spiers, Kulig and Kipp, 2010). The researcher made sure he protected the dignity and welfare of the participants in accordance with ethical principles. Ethical approval was obtained from the University of KwaZulu-Natal Ethics Committee. In addition, permission to conduct research was obtained from the General Director of Nyagatare District as well as the person incharge of each health centre. Ethical consideration was considered in collaborative partnership, social value, scientific validity, fair selection of study population, favourable risk–benefit ratio, independent review, informed consent, respect for recruited participants and study communities, data management as discussed by Ford, Mills, Zachariah and Upshur, 2009).

Results

Demographic data

Demographic data included age, marital status, educational background, religion, occupation, and number of children in the family. All data are presented in Table 1.
Table 1 Demographic data

<table>
<thead>
<tr>
<th>Demographic data</th>
<th>Element of demographic data</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital status</td>
<td>Single</td>
<td>12</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>117</td>
<td>85.4</td>
</tr>
<tr>
<td></td>
<td>Widow</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>5</td>
<td>3.6</td>
</tr>
<tr>
<td>Educational background</td>
<td>None</td>
<td>27</td>
<td>19.7</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>85</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>25</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Occupation</td>
<td>Unemployed</td>
<td>8</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Trader</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>Farmer</td>
<td>104</td>
<td>75.9</td>
</tr>
<tr>
<td></td>
<td>Stockbreeder</td>
<td>4</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Public worker</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>Private worker</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Religion</td>
<td>None</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>Christian</td>
<td>117</td>
<td>85.4</td>
</tr>
<tr>
<td></td>
<td>Muslim</td>
<td>10</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>Traditional indigenous beliefs</td>
<td>1</td>
<td>0.7</td>
</tr>
</tbody>
</table>

In terms of marital status, the highest number was for married women at 85.4% (n=117), widows at 2.2% (n=3), singles at 8.8% (n=12) and divorced women at 3.6% (n=5).

The educational background shows a high number of educated participants at primary level (62%, n=85), secondary level (18.2%, n=25) and uneducated (19.7%, n=27). There were no participants educated up to tertiary level.

The occupation of participants varied. Of the participants, 75.9% (n=104) were farmers, 6.6% (n=9) were traders, 6.6% (n=9) were public workers, 2.9% (n=4) were stockbreeders, 2.2% (n=3) were private workers, and 5.8% (n=8) of the women who were present during the data collection period were unemployed.

The majority of participants were Christians (85.4%, n=117), followed by Muslims (7.3%, n=10), traditional indigenous beliefs were represented by 0.7% (n=1), and 6.6% (n=9) of the participants had some other type of religion.

Abortion information

Abortion is not allowed in Rwanda. However, in the high- and middle-income countries, this is used as a family planning method. This motivated the researcher to ask the question regarding termination of pregnancy to discover the views of the participants. Table 2 presents the perceptions regarding abortion.
Table 2 Termination of pregnancy

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you heard about termination of pregnancy (abortion)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>100</td>
<td>73.0</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>27.0</td>
</tr>
<tr>
<td>View of abortion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is a means for fertility regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>9.5</td>
</tr>
<tr>
<td>No</td>
<td>124</td>
<td>90.5</td>
</tr>
<tr>
<td>It is a violation of child rights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>109</td>
<td>79.6</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>20.4</td>
</tr>
<tr>
<td>Place where abortion occurs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abortion takes place at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>99</td>
<td>72.3</td>
</tr>
<tr>
<td>No</td>
<td>38</td>
<td>27.7</td>
</tr>
<tr>
<td>Abortion takes place at traditional healer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78</td>
<td>56.9</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>43.1</td>
</tr>
<tr>
<td>Abortion takes place at clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>45</td>
<td>32.8</td>
</tr>
<tr>
<td>No</td>
<td>92</td>
<td>67.2</td>
</tr>
<tr>
<td>Abortion takes place at hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>21.9</td>
</tr>
<tr>
<td>No</td>
<td>107</td>
<td>78.1</td>
</tr>
<tr>
<td>If you could access a termination of pregnancy service, will you use it if you became pregnant unintentionally?</td>
<td>Accepted to use service</td>
<td>17</td>
</tr>
</tbody>
</table>

In the table above, in the last row, the researcher presents the participants who would make use of the abortion service if the service were made available to them. The participants heard about termination of pregnancy (abortion) at 73.0% (n = 100); they consider it as a mean for fertility regulation at 9.5% (n = 13), as a violation of child rights at 79.6% (n = 109); they confirmed that abortion takes place at home at 72.3% (n = 99), at traditional healer at 56.9% (n = 78), at clinic at 32.8% (n = 45), at hospital at 21.9% (n = 30); then they agreed to use this method at 12.4% (n = 17) if they become pregnant unintentionally and if the they could access a termination of pregnancy service.

Discussion

Information on abortion is root of this study because it is considered to be one type of family planning method in some countries (Bristow, 2010) while others view it differently (Nambi, 2009; Ndikubwayezu, 2009). Perceptions on abortion have to be taken into account so that researchers and policy-makers can come up with strategies to educate and inform communities. When done in the backstreets, abortion takes the lives of women. Abortion in Nyagatare District was known by 73.0% of the participants and was seen as a means of fertility regulation by 27.0% of the participants; which is in line with the thoughts of some Canadians as well as South Africans (Campaign Life Coalition, 2009). However, none of participants were using it. Others saw abortion in light of violation of children’s rights (79.6%). However, in high-income countries, including South Africa, abortion is seen as a family planning method. In Rwanda, as other low income countries, abortion is legally prohibited (Nambi, 2009; Ndikubwayezu, 2009).

The research participants reported that abortion usually takes place at home (72.3%), on the traditional healer’s premises (56.9%), at the clinic (32.8%) and in a hospital (21.9%). The foremost place to have an abortion, as reported by the participants, was at home. Some reported that when an individual embarks on an abortion process, she leaves the house and goes into the bush so that nobody will know what happened. In Rwanda, no clinic or hospital is permitted to perform an abortion unless there is an abnormality to the foetus or when the life of the mother is endangered. For instance, when the life of woman is endangered by a present pregnancy or when the foetus has an abnormality that could not allow the baby to survive an abortion can be legally conducted. However, at home and in the case of bush abortions (back street abortions in South Africa) there is no medical indication for such abortion. Unfortunately, due to poor standards and care in these illegal practices, the woman
is exposed to complications. In Rwanda, it is prohibited for traditional healers to perform an abortion (Mutesi, 2011).

However, even although abortion is prohibited, 12.4% of participants wished for the service to be available should they unintentionally become pregnant.

**Conclusion**

The abortion issue is the debate all over the world, the present paper aimed at exploring the perception of women attending Nyagatare Health District, in Rwanda on abortion as one of family planning methods. The utility of family planning is to avoid unintended pregnancies by using correct and consistent chosen methods. The women living in Nyagatare District wish to have abortion program at the health centres at 12.4%. In Rwanda, the abortion issue remains to be problem. The present research was conducted to the women; there needs the views from men too.

**References**


Comparing the risk of obesity-related morbidity and mortality in different ethnic groups

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Abstract

Objective: This paper aims to review the current literature in order to compare different ethnic groups with respect to the known racial disparities in the risk of obesity-related morbidity and mortality, thus orienting clinical practitioners for a better practice in light of evidence-based data.

Methods: Literature review using key words - obesity, metabolic syndrome, ethnic differences, BMI, cardiovascular risk - through PubMed database from 2000 to now.

Results: The prevalence of metabolic syndrome and cardiovascular diseases as complications of overweight and obesity are variable among different ethnicities worldwide. Recent studies contra-indicate the use of global cutoff points for measures like body mass index (BMI) and waist circumference (WC) as it has been demonstrated that, for similar BMI and WC values, different populations present distinct patterns of body shape and fat deposition. For instance, South Asians are at increased risk of cardio-metabolic disorders even with a lesser degree of body adiposity.

Conclusions: Instead of a direct cause-effect relationship, biologic/genetic and environmental factors like socioeconomic status, culture, religion, health habits, geographic location, and their intricate interactions form the complex basis of ethnic disparities on predisposing to obesity-related diseases, thus the importance of an individualized analysis of the obesity indexes, in order to optimize patient management and to reduce health risks.

Keywords: obesity, BMI, adiposity, ethnicities, metabolic syndrome, diabetes

Introduction

Ethnic and racial differences as predisposing factors to obesity and metabolic disorders have a significant impact on public health worldwide. Although obesity as assessed by body mass index (BMI) has been associated with an increased risk of metabolic disorders and cardiovascular disease (CVD), some studies have demonstrated a contrasting finding, called ‘obesity paradox’. This term is used to describe the inverse relationship between BMI and mortality risk in subjects with CVD, despite the conventional knowledge that CVD is highly associated with obesity and overweight. It is well known that BMI singly cannot discriminate lean and fat mass, thus the concept of ‘normal weight obesity’, referent to patients who have high body fat in spite of normal BMI. Such patients are at increased risk of CVD and have elevated mortality rates, particularly females. The most accepted explanation for these observations is the close relationship between central fat accumulation and visceral fat, which is the major etiopathogenic factor of high blood pressure, inflammation and insulin resistance.

The different patterns of body shape and fat deposition observed in distinct ethnicities make BMI an inaccurate method for predicting fat distribution and cardio-metabolic risks in different parts of the world. For instance, it has been demonstrated that for similar BMI values, South Asians accumulate more fat and African less fat than the general population. As a result, obesity may be overestimated among African groups and underestimated among South Asians.

Susceptibility to a multifactorial disease like obesity includes biologic (genetic) and non-biologic (environmental) factors. Genome and DNA sequences differ in frequency in distinct
populations and the interaction between genetic traits and specific environments results in the observed phenotypic variation at individual and population levels. A great challenge in this area is the difficulty to measure the relative influence of environmental versus genetic predisposing factors, and how they interact with each other. The recent advances on genetic information, particularly in the nutritional and metabolic fields, might be very helpful for better understanding the risks disparities among different populations, thus facilitating the development of effective prevention and control interventions.

**Ethnic differences**

Asia comprises the population with the most rapidly increasing diabetes prevalence rates. According to recent estimates, by the year of 2025, this continent will have 100 million people with type 2 diabetes mellitus (DM2). Such enormous prevalence rate differs from other countries and continents as it has quickly increased in a relatively short period, besides affecting a younger population with lower BMI. It has been observed that, when compared to Caucasians, Asians with similar BMI have higher percentages of body fat, more accentuated abdominal obesity pattern, higher concentrations of intramyocellular lipids and higher fat stores in the liver. These high-risk features are sufficient to predispose the Asian population to insulin resistance even at a lesser obesity degree.

The remarkable disparities in body composition vary according to the region of Asia. Considering the three major racial Asian groups – Chinese, Indians and Malay – for a similar BMI, Indians present the highest levels of body fat, followed by Malay and Chinese. Obviously, genetic variability affecting body composition, i.e., lean versus fat mass plays an important role in the predisposition to the distinct patterns of adiposity and muscleularity in different races. Moreover, further interactions with the environment and other genes during the prenatal and postnatal periods, as well as during lifetime may be responsible for modifying body composition, the distribution of fat and related metabolic disturbances. In the United Kingdom, current data revealed that in males, obesity rates are lower in Chinese, Bangladeshi, Pakistani, Indian and Black groups compared to the general population. Among females, prevalence is higher among Black African, Caribbean and Pakistani populations, and lower in the Chinese.

The commonest way of assessing abdominal obesity, which is considered the most dangerous pattern of the disease, is through the waist circumference (WC) and waist-to-hip ratio (WHR) measurements. Recently, it has been demonstrated that the central or abdominal distribution of fat has a great direct impact in the mortality rates of patients with CVD. The cutoff points of these indexes were set during an event carried out by the CDC – Centers for Disease Control and Prevention - in Atlanta, USA, based on White Caucasian people, mostly Europeans. However, due to the well-known population heterogeneity concerning obesity diagnostic criteria, it is now consensual that the currently used cutoff points might not be applicable to all ethnicities. Experts consider that BMI and WC thresholds should be ideally determined according to the population racial background. These parameters include Asians who live in their native continent and their descendants who live in Western countries as well. In comparison with Caucasians, Asian ethnic groups present greater body fat with lower measures of weight, height, BMI and WC.

The World Health Organization (WHO) has tried to pragmatically classify the risks of metabolic disorders and hypertension based on Caucasians BMI. A value of 25 was considered reasonable to be overall applied but it was far from a consensus, since many American researchers agreed that BMI values up to 27-28 would be normal, especially for middle aged and older Caucasians. On the other hand, Japanese researchers claimed that lower thresholds would be needed for assessing Asian patients considering their increased cardio-metabolic risks. Since then, several groups have been trying to establish lower BMI cutoff points for Asians. For instance, China and Japan reduced BMI thresholds to 24 (overweight) and 28 (obesity). In India, these values are 23 and 27, respectively.
European data and the International Diabetes Federation have demonstrated that abdominal obesity should be assessed considering ethnic-specific WC values, which are more reliable predictors of metabolic syndrome and cardiovascular risks than BMI. A conjoint WHO/IASO/IOTF meeting had already proposed different WC cutoff points for distinct populations, as summarized in table 1.

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Gender</th>
<th>WC cutoff points (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Male</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>88</td>
</tr>
<tr>
<td>Europeans</td>
<td>Male</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>80</td>
</tr>
<tr>
<td>South Asians</td>
<td>Male</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>80</td>
</tr>
<tr>
<td>Chinese</td>
<td>Male</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>80</td>
</tr>
<tr>
<td>Japanese</td>
<td>Male</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>90</td>
</tr>
</tbody>
</table>

Table 1: Racial differences in the proposed WC thresholds for predicting risks of metabolic syndrome. Observations: (i) South and Central Americans: use South Asian recommendations until more specific data are available; (ii) Sub-Saharan Africans, Eastern Mediterranean and Middle East (Arab) populations: use European data until more specific data are available.

Ethnic differences in younger and older groups

Obese adolescents are at high risk for physical and mental health disorders such as hypertension, diabetes and depression. Risk factors for obesity in childhood and adolescence include socioeconomic conditions, gender and ethnicity. In the last decade, the prevalence of obesity among African and Hispanic American adolescents increased by more than 10%, which contributes for the higher rates of diabetes in these populations in comparison with their White peers. According to an American investigation, the poorer the population, the higher the adolescent obesity prevalence. Furthermore, minority populations (Black and Hispanic) tend to have higher rates of obesity in adolescence. Official British data also show higher obesity rates for Black girls and boys than for the White population at the same age in the United Kingdom.

In comparison to Caucasians, Asian adolescents present higher subcutaneous fat deposition and a less prominent gynoid fat pattern. In fact, when Indian adolescents with abdominal obesity were compared to Caucasians at the same age, it has been observed a lower sensitivity to insulin in the Asians group.

Taking into consideration the other life extreme, a clinical study investigated the association between the onset of functional disabilities as a long-term effect of overweight and obesity in middle-aged and elderly Americans divided into 3 racial groups – White, Black and Hispanic. Possible confounders like lifestyle, chronic diseases and socio-demographic aspects were statistically controlled. The trial evaluated data over a period of 10 years and included a representative sample of individuals, ranging from 50 to 64 years old. The researchers proposed two main questions: i) Do ethnic differences affect the impact of obesity on the onset of functional impairment? ii) If they do, are these disparities related to mobility and difficulties on the daily living activities (DDLA)?

This study demonstrated that overweight and obese Blacks and Hispanics were more likely to progress to DDLA than Whites with the same BMI over the follow-up period. Moreover, this negative effect was more pronounced in Hispanics than in Blacks. These findings may be explained by the distinct body composition – fat versus lean mass – in different racial groups, as previously discussed.
Conclusion

Several uncertainties remain concerning the association between ethnicity and obesity. This is especially true when we try to determine how much of the prevalence disparities of obesity and the related comorbidities among distinct ethnic groups are due to biologic/genetic factors, lifestyle, culture, health behaviors, environment or socioeconomic status.

By now, the main conclusion in this issue is with respect to establishing individualized approaches, particularly when analyzing measures like BMI and WC, which have been shown to vary considerably among different populations and ethnicities. Such measures are helpful and simple tools for the diagnosis of overweight, obesity and abdominal obesity, and for predicting associated health risks, especially cardio-metabolic disorders. In order to avoid over- or underestimating obesity and its serious consequences, the practitioner should keep in mind that those indexes are to be carefully analyzed in each patient, as they are highly influenced by ethnic differences. Furthermore, a better comprehension of the role of genetic factors in obesity and metabolic syndrome will optimize the current strategies of prevention and control of these conditions.

References

[5.] Misra A, Wasir J, Vikram N. Waist circumference criteria for the diagnosis of abdominal obesity are not applicable uniformly to all populations and ethnic groups. Nutrition. 2005;21(9):969-976. DOI: http://dx.doi.org/10.1016/j.nut.2005.01.007
Calculating the Financial Health Economic Impact of Weight Loss in Obese Populations

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Abstract
Health promotion programs have been constantly developed by the Health Surveillance Agencies of many countries aiming at tackling obesity. U.S. data revealed impressive obesity-related costs of $117 billion in 2000 - $61 billion for direct medical costs and $56 billion for indirect costs, i.e., those related to the impact of the disease on the country’s economy. In the UK, economic projections revealed that indirect costs might have reached £27 billion by 2015. The majority of the educational and preventative actions target lifestyle changes, childhood obesity and diabetes. More than making the population aware of the benefits of healthier habits and their potential savings, stakeholders and funders are looking forward to better assessing the economic impact of health education programs, which can be quantified by different methods such as the time value of money analyses, shadow pricing, and the cost-benefit and cost-effectiveness indexes. In the specific case of obesity as a risk factor for cardio-metabolic diseases, estimates obtained from different analysis reveal that great amounts of money – as high as 11.2 billion dollars – can be saved by delaying type 2 diabetes onset in 6 years, in a hypothetical population of 2 million obese adults who have effectively lost weight. Furthermore, in agreement with the ancient philosopher Virgil, who quoted “the greatest wealth is health”, by living longer and healthier, people may produce more and improve individual and familiar financial lives, thus contributing economically to their communities and countries. The aim of this paper is to briefly report how to assess and calculate the financial impact of public health programs to tackle obesity.

Keywords: obesity, public health, weight loss, economy, cost-benefit, cost-effectiveness

Introduction
Over the years, several studies have estimated health-care expenditures attributable to obesity. Such estimates show great variations, mostly because many of them do not consider the “extra” costs of comorbidities that often occur during the gained years of life. One of these studies, having taken into account those extra-costs, estimated the lifetime obesity related costs (20-85 years of age) in 4.32%. In other words, “if obesity were prevented (at no charge) before 20 years of age and the cohort remained non-obese throughout life, then, in the subsequent 65 years, direct healthcare costs would be reduced by 4.32%”.

U.S. data revealed impressive obesity-related costs of $117 billion in 2000 - $61 billion for direct medical costs and $56 billion for indirect costs, i.e., those related to the impact of the disease on the country’s economy, e.g., loss of productivity. The National Health Service (NHS) estimated a great increase of the costs for treating obesity and comorbidities in England, ranging from £479.3 million in 1998 to £4.2 billion in 2007. Indirect costs have been estimated between £2.6 billion and £15.8 billion. Economic projections revealed that indirect costs might have reached £27 billion by 2015.

Health promotion programs have been constantly developed by the Health Agencies of many countries. In the obesity field specifically, such programs target childhood obesity, diabetes, implementation of physical activity facilities and dissemination of healthy eating habits. Impacts of public health actions are often evaluated by positive changes in the population’s lifestyle and, more objectively, by the reduction in weight and body mass index (BMI). Additionally, stakeholders and funders are looking forward to analyzing the economic
impact of health education programs, which can be quantified by different methods\textsuperscript{5}. The aim of this paper is to briefly report how to assess and calculate the financial impact of public health programs to tackle obesity.

**Methods**

The assessment of the economic impact of health education programs can be quantified by different methods, such as the time value of money analyses, shadow pricing, and the cost-benefit and cost-effectiveness indexes, which are described below assuming the specific case of obesity and weight control.

**Results**

The first way to assess the economic impact of an educational program is through a survey among the participants. An example is the interdisciplinary program called Small Steps to Health and Wealth\textsuperscript{TM} (SSHW): according to it, making positive lifestyle changes will lead to improvement in both health and personal finances. Periodically, participants complete evaluation surveys that focus on their health, finances, and the relationship between them\textsuperscript{6}. This method of qualitative analysis is useful as a complement of the more objective quantitative data, described below.

The motivation to make positive lifestyle changes may arise from the identification of known beneficial practices and the potential savings that these changes can bring. Some examples of behavioral changes and their related savings are shown in the Table 1. If we assume that the enlisted lifestyle changes can be fully implemented in a hypothetical obese population of 2 million adults, a simple calculation will reveal annual savings of about 5.7 billion dollars.

<table>
<thead>
<tr>
<th>Improved Health/Nutrition Practice</th>
<th>Weekly Savings</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving US$3 a day currently spent on junk food, fast food, or alcohol</td>
<td>US$21</td>
<td>US$1,092</td>
</tr>
<tr>
<td>Getting two meals from one by eating smaller servings</td>
<td>US$ 9</td>
<td>US$ 468</td>
</tr>
<tr>
<td>Substituting pasta, beans, soups, etc. for meat 2-3 times per week</td>
<td>US$15</td>
<td>US$ 780</td>
</tr>
<tr>
<td>Reduce the number of meals eaten away from home by two</td>
<td>US$10</td>
<td>US$ 520</td>
</tr>
</tbody>
</table>

Another way to determine the economic impact of a program is the “time value of money analyses”. Through this method, we can calculate how much can be saved if a disease onset is delayed, type 2 diabetes (DM2) for example, thus measuring the financial impact and the effectiveness of a determined program\textsuperscript{5}. We can use again the example of a hypothetical population of 2 million obese adults, who have effectively lost weight, to have such calculation done.

Health care costs for a diabetic patient are estimated in US$13,243 annually; the same costs for a non-diabetic person are US$2,560, a difference of $10,683\textsuperscript{5}. Consider the average age of DM2 onset in the assumed obese population is 40 years, with a 5% discount rate. Thinking in a realistic rate in which 10% of the 2 million participants (200,000) are able to have a delayed onset of diabetes after losing weight, pushing back the average age from 40 to 46, and avoiding the $10,683 annual costs, the economic benefit could be calculated:

- Annuity value = 6 years of delay * 5% discount rate = 5.2421
- Per person = $10,683 x 5.2421 = $56,001
- For the population = $56,001 x 200,000 = $11.2 billion!

“Shadow pricing”\textsuperscript{5} technique, on the other hand, is based on simple extrapolations from trustable published data that demonstrate the money savings of successful health programs\textsuperscript{5}. 
For instance, the American CDC revealed that annual medical costs of overweight/obese people who lose 10% of their weight could be reduced by $2,200–$5,300 by decreasing costs associated with diabetes, hypertension, dyslipidemia and cardiovascular diseases. Using simple math, considering the same 2 million obese populations with an average weight of 80kg, a sustained weight loss of 10%, i.e., 8kg, means saving a range from 4.4 to 10.6 billion dollars yearly.

Cost-benefit analysis is also an effective method to assess the economic impacts of health interventions. Costs refer to the required resources for planning, implementing and concluding a program, e.g., staff salaries, trips, publications, equipment, phone calls, supplies, etc. They are determined by placing a dollar value on the currency. On the other side, benefits are the positive outcomes originated from the health intervention, such as money saving and debts reduction.

A robust meta-analysis on the workplace wellness programs and their related costs and savings demonstrated annual average savings of $358 per employee as the result of health improvement, while the firms spent $144 per employee per year. Across the 15 trials that were reviewed, the authors estimated an average return of 3.27 from the initial investment, i.e., for every dollar spent, $3.27 was saved. In addition, for every dollar spent, costs related to absenteeism fell by about $2.73. More than 90% of the wellness interventions analyzed in this meta-analysis took place in large firms with more than 1,000 employees. One-fourth of the programs involved more than 10,000 workers. Similar results had been previously reported from Australian data of weight loss programs. The authors revealed an average cost-benefit of $428 per enrolment, and a benefit-cost ratio of 3.2.

Worksite interventions target people from 18 to 65 years old. Workers influenced by such programs may represent as much as 15.7% of a country’s population. Brazilian population is estimated in about 205.5 million people representing 32.26 million workers. In Brazil, obesity prevalence among adults is estimated in 15% (BMI > 30kg/m2), meaning that among those aged 18-65 years who are the target population of workplace programs for weight loss, 4.8 million are obese. According to Cecchini et al., these worksite campaigns spend about US$0.82 per head in Brazil, meaning a total cost of 26.5 million dollars yearly to cover 32.26 million people. Considering a benefit-cost ratio of 3.2, about $84.8 million should be annually saved. The same calculations may be applied for other health programs to tackle obesity, such as mass media campaigns, fiscal measures, physician counseling, food labeling, advertising regulation and, targeting children, school interventions, as shown in Table 2. Summing up all these efforts and investments would result in approximately 380 million dollars savings in Brazil per year, involving the entire obese population, i.e., 30.8 million people.

Table 2: Summary of coverage and costs of selected preventive interventions for weight loss in Brazil (adapted from Cecchini et al., 2010).

<table>
<thead>
<tr>
<th>Target</th>
<th>School actions</th>
<th>Worksite actions</th>
<th>Mass media campaigns</th>
<th>Fiscal measures</th>
<th>Physician counseling</th>
<th>Food advertising regulation</th>
<th>Food labeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>8-9</td>
<td>18-65</td>
<td>&gt;18</td>
<td>&gt;0</td>
<td>22-65</td>
<td>2-18</td>
<td>&gt;0</td>
</tr>
<tr>
<td>% of the population</td>
<td>1.7-4.2</td>
<td>3.4-15.7</td>
<td>61.1-80.4</td>
<td>100</td>
<td>1.1-14.7</td>
<td>19.3-36.5</td>
<td>100</td>
</tr>
<tr>
<td>Cost per head*</td>
<td>0.82</td>
<td>0.82</td>
<td>0.27</td>
<td>0.01</td>
<td>1.71</td>
<td>0.04</td>
<td>0.15</td>
</tr>
</tbody>
</table>

* 2005 US$

Health interventions contribute to a later onset of chronic diseases, instead of preventing their occurrence. Such beneficial effect on morbidity can be assessed by calculating the averted disability-adjusted life-years (DALYs). The cost-effectiveness ratios (CE) of a determined program are calculated in dollars per DALY averted, thus representing the money...
saved from each additional year of healthy life, in comparison with a no-prevention or treatment-only scenario\textsuperscript{11}.

Table 3 shows the CE of some weight loss programs in Brazil. Taking as example worksite interventions, the DALY averted per million population is 1,187 in the medium-term (20 years). The estimated CE of this intervention is 8,270, which means that for an obese population of 4.8 million workers, about 47 million dollars might be saved if weight is effectively lost in that period. When considering other weight loss interventions (table 3), cost savings could reach 1.5 billion dollars if the 30.8 million obese Brazilian populations is fully covered, over a period of 20 years\textsuperscript{11}.

Table 3: E-activeness and cost-activeness of health interventions after 20 years in Brazil. DALYs = disability-adjusted life-years saved per million population. CE = cost-e-activeness ratios, expressed in US$ per DALY averted (adapted from Cecchini et al., 2010).

<table>
<thead>
<tr>
<th>Weight loss programs</th>
<th>DALYs</th>
<th>CE (US$)</th>
<th>Total savings (US$ per million population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worksite interventions</td>
<td>1,187</td>
<td>8,270</td>
<td>9.8 million</td>
</tr>
<tr>
<td>Mass media campaigns</td>
<td>627</td>
<td>5,074</td>
<td>3.2 million</td>
</tr>
<tr>
<td>Physician counseling</td>
<td>2,805</td>
<td>8,503</td>
<td>23.85 million</td>
</tr>
<tr>
<td>School-based interventions</td>
<td>4</td>
<td>*</td>
<td>&gt; 4 million</td>
</tr>
<tr>
<td>Food labeling</td>
<td>1,030</td>
<td>9,962</td>
<td>10.26 million</td>
</tr>
</tbody>
</table>

* Cost-e-activeness ratio is higher than US$1,000,000 per DALY

Discussion

Here a comparison becomes necessary between the investments and preventive actions to tackle obesity in a developed and in a developing country, such as England and Brazil for instance. England’s population is estimated in 53.8 million people\textsuperscript{14} – 15.7\% representing 8.44 million workers. In this country, obesity prevalence among adults is 25.6\%, i.e., among those aged 18-65 years who are the target population of workplace programs for weight loss, 2.16 million are obese\textsuperscript{15}. In that country, these worksite campaigns spend about US$5.48 per head (versus $0.82 in Brazil), meaning a total cost of 46.2 million dollars yearly to cover 8.44 million people\textsuperscript{11}. Considering a benefit-cost ratio of 3.2, about $148 million should be annually saved\textsuperscript{9, 10}. Summing up all health programs and investments that target the entire obese population of 13.8 million people would result in costs of approximately $287.5 million (versus $118.7 million in Brazil). The assumed benefit-cost ratio of 3.2 would lead to $920 million savings in England per year, in comparison to $380 million in Brazil, i.e., 2.4 times higher\textsuperscript{11, 15}.

Also in England, through worksite interventions, the DALY averted per million populations are 1,725 over a 20-year period. The estimated CE of this intervention is 45,630, which means that for an obese population of 2 million workers, about 157 million dollars might be saved if weight is effectively lost in that period. When considering other weight loss interventions, cost savings could reach 3.8 billion dollars within 20 years, if the obese English population is fully covered (2.5 times the Brazilian estimates)\textsuperscript{11}.

Comparing public health data in England and Brazil, it is not difficult to observe the outstanding differences between the investments aiming at weight loss in these countries, even whether considering that England’s obese population is less than half of Brazilian’s. Not less important to be pointed out is that, the higher the investments in education health programs, the higher the return, in terms of both cost-benefit and cost-effectiveness.

Conclusions

Health programs supported by the government or large firms are highly expected to bring sufficient public benefits to make them worthy of reducing medium- and long-term expenditures in health care, like expensive medications, hospitalizations, surgeries, etc. In
contrast with financial management programs that rely on economic indicators, the impacts and outcomes of health education interventions are often calculated indirectly. In the specific case of obesity, which is a well-established risk factor of serious diseases like diabetes and cardiovascular diseases, estimates obtained from different methods reveal that great amounts of money – as high as 11.2 billion dollars – may be saved by delaying 2DM onset in 6 years, in a hypothetical population of 2 million obese adults who lost weight.

More than the public and entrepreneurial investments on preventive actions in health, healthier lifestyle choices elevate the odds of living longer and better. Healthy people who live longer produce more as they have more time to increase their savings. In this line of thought, the economy of a country or a community may improve due to this secondary effect of health programs in individual and familiar financial lives.

References

Preferred Health care System of the people residing at Arpookara, Kottayam district in India: A cross-sectional Study

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Abstract

This study was designed to study about the preferred health care system of the people residing at Arpookara, Kottayam district in India. In this study investigator tried to find out the common health problems, preferred place for treatment, preferred system of medicine, main obstacles to access the better treatment and expectations from government for better health care delivery, of the study population. The populations for the study were the people residing at Arpookara, Kottayam district in India which includes 410 households with 2360 members. One hundred households (samples) from the study population were selected so that findings can be generalized for the population. Simple random technique is used for samples selection. Samples include 100 households with 456 members, out of which 243 members are males and rest 213 are females. The tool used for data collection is an interview schedule which consists of 2 Performa, Performa 1 and Performa 2. Performa 1 seeks personal details while Performa 2 seeks information about common health problems, preferred place for treatment, preferred system of medicine, main obstacles to access the better treatment and expectations from government for better health care delivery, of the study population. After the data collection its analysis is done. Members of 73 (73%) households are preferring government hospital for treatment while private hospital, private practitioners and traditional healing centers are preferred by 19 (19%), 6(6%) and 2(2%) house members respectively. In 94 (94%) houses, Allopathic system of medicine is preferred while Ayurvedic and Homeopathy system of medicine are preferred by only 4 (4%) and 2 (2%) houses respectively. The major health problems of members (above age of 6 years) are Chikungunya-39 (9.51%), Jaundice-17 (4.41%), Typhoid-1 (0.24%), Bronchial Asthama-1 (0.24%), Viral fever--1 (0.24%), Coronary heart disease-2 (0.48%), Stroke- 3 (0.73%) and Diabetes-1 (0.24%). About 345 (84.14%) members were not suffered from any disease since last year. According to 56 (56%) households both the Service unavailability and financial problem are the main obstacles to access better treatment while 18 (18%) households suggests that service unavailability only and rest 26(26%) households suggested that main obstacle is financial problem. for the better healthcare delivery, 44 (44%) households expects availability of pure drinking water, regular cleaning of surroundings and primary health centre from government. About 31 (31%) households’ needs pure drinking water and rest 16 (16%) households needs regular cleaning of surroundings. Rest 9 (9%) households expects primary health center at their ward. On the basis of findings of this study, Researcher recommended his suggestions to higher healthcare administrative staff to take preventive measures for prevention and control of diseases and thus too maintain a high standard of health.

Keywords: Healthcare System; Treatment Place; Medicine System; Health Problem; Obstacle.
1. Introduction

The present study was undertaken with the objectives to study the socioeconomic status, common health problems, preferred place for treatment, preferred system of medicine, main obstacles to access the better treatment and expectations from government for better healthcare delivery, of the people residing at Arpookara, Kottayam district in India. **Socioeconomic Status (SES)** is an economic & sociological combined total measure of a person’s work experience and of an individuals or family’s economic & social position relative to others, based on income, education & occupation. When analyzing a family’s SES, the household income earner’s education & occupation are examined, as well as combined income, versus with an individual, when their own attributes are assessed. There is a strong relation between socioeconomic status & health. This co-relation suggests not only the poor who tend to be sick when everyone else is healthy but also that, there is a continual gradient from the top to the bottom socioeconomic ladder relation to status of health. This phenomenon is called Socio-Economic Status gradient or S.E.S. gradient. The gradient is a vector operation which operates on a scalar function to produce a vector whose magnitude is the maximum rate of change of the function at the point of gradient and which is pointed in the direction of that maximum rate of change. Socioeconomic status is typically broken into three categories, High SES, Middle SES & Low SES to describe the three areas a family or an individual may fall into. When placing a family or individual into one of these categories any or all of the three variables (income, education and occupation) can be assessed. A fourth variable wealth may also be examined when determining socioeconomic status. Additionally, income, occupation & education have shown to be strong predictors of a range of physical & mental health problems, ranging from respiratory diseases, arthritis, coronary diseases and schizophrenia.

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Mueller and Parcel defined SES in 1981 as “the relative position of a family or individual on a hierarchical social structure, based on their access to or control over wealth, prestige and power. More recently, SES has been defined as “a broad concept that refers to the placement of persons, families, households and census tracts or other aggregates with respect to the capacity to create or consume goods that are valued in our society.” No matter how it is defined, it appears that SES, as it relates to health status/healthcare, is an attempt to capture an individual’s or group’s access to the basic resources required to achieve and maintain good health. Adler et al. present three pathways through which SES impacts health, which include its association with healthcare, environmental exposure, and health behavior and lifestyle. Together, these pathways are estimated to account for up to 80% of premature mortality.

Need of the study is to assess the socioeconomic and health status and to understand the health seeking behavior of the study population. High incidence of the Chikungunya cases in this area, during lasts years’ outbreak also calls for a detailed study of the health status of the people. The findings and conclusion of the study plays an important role in understanding the socioeconomic status, health seeking behavior and environmental conditions of the people. The report may be help the officials of Arpookara, Kottayam district to notify the major problems of the community and to take corrective or remedial measures, preventive methods and thus to maintain a high standard of health.

2. Research methodology

The present study was conducted in Arpookara, Kottayam district. Kottayam is a city in the Indian state of Kerala. It is located in central Kerala. The city is an important trading center of spices and commercial crops, especially rubber. The populations for study were the people residing at Arpookara, kottayam in India which includes 410 households with 2360 members. One hundred households (samples) from the study population were selected using simple random technique. Samples include 100 households with 456 members, out of which 243 members are males and rest 213 are females. An interview schedule was used for data collection which consists
of 2 Performa, Performa 1 & Performa 2. Performa 1 seeks personal details while Performa 2 seeks information about (a) Common health problems (b) Preferred place for treatment (c) Preferred system of medicine (d) Main obstacles to access the better treatment (e) Expectations from the government for better healthcare delivery, of the study population. To analyze the data, collected information was classified in the light of the objectives set forth for the study. The classified data was coded, tabulated and was analyzed by using appropriate statistical (Percentage & Frequencies) units.

3. Result and discussion

The data (figure no. 1) depicts that the major health problems of members (above age group of 6 years) are Chikungunya-39(9.51%), Jaundice-17 (4.41%), Typhoid-1 (0.24%), Bronchial Asthma-1 (0.24%), Viral fever-1 (0.24%), Coronary heart disease-2 (0.48%), Stroke - 3 (0.73%) and Diabetes-1 (0.24%). About 345 (84.14%) members were not suffered from any disease since last year. It is clear from table no. 1 that members of 73 (73%) households are preferring government hospital for treatment, out of which 62(84.93%) prefers due to accessibility and affordability both, 4(5.47%) due to affordability only, 3(4.10%) due to good treatment, 2(2.73%) due to acceptability and rest 2(2.73%) due to accessibility. Members of 19 (19%) prefers private hospital while private practitioners and traditional healing centers are preferred by 6(6%) and 2(2%) household members respectively. In 94 (94%) houses, Allopathic system of medicine is preferred while Ayurvedic and Homeopathy system of medicine are preferred by only 4 (4%) and 2 (2%) houses respectively (see figure no. 2).

Figure no. 3 shows that, according to 56 (56%) households both the Service unavailability and financial problem are the main obstacles to access better treatment while 18 (18%)households suggests that service unavailability only and rest 26 (26%) households suggested that main obstacle is financial problem. For the better healthcare delivery, 44 (44%) households expect availability of pure drinking water, regular cleaning of surroundings and primary health centre from government. About 31 (31%) households’ needs pure drinking water and rest 16 (16%) households needs regular cleaning of surroundings. Rest 9 (9%) households expects primary health center at their place for better healthcare delivery (See table 2).

4. Conclusion

The major health problems are chikungunya and jaundice. About health seeking behavior, Majority of households are preferring government hospital for treatment due to accessibility and affordability. Only few households prefer private hospitals and private practitioners for treatment as they think good treatment is available there. Most of the households are using allopathy medicine because they get quick relief but few members also prefer ayurvedic and homeopathy medicines for treatment. Service unavailability and financial problem are the main obstacles for people to access better treatment. For the delivery of better healthcare, people expects availability of pure drinking water, primary health center, regular cleaning of surroundings and better transport facility in their ward from government.
5. Tables and figures

Figure No 01

Figure No 02

Figure No 03
Table 1. Preferred Place for Treatment

<table>
<thead>
<tr>
<th>Reason for Preference</th>
<th>Accessibility</th>
<th>Acceptability</th>
<th>Affordability</th>
<th>Good Treatment</th>
<th>Accessibility+Affordability</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt. Hospital</td>
<td>2 (2.73%)</td>
<td>2 (2.73%)</td>
<td>4 (5.47%)</td>
<td>3 (4.10%)</td>
<td>62 (84.93%)</td>
<td>73</td>
</tr>
<tr>
<td>Private Hospital</td>
<td>1 (5.26%)</td>
<td>2 (10.52%)</td>
<td>1 (5.26%)</td>
<td>11 (57.89%)</td>
<td>4 (21.05%)</td>
<td>19</td>
</tr>
<tr>
<td>Private Practitioners</td>
<td>1 (16.66%)</td>
<td>0</td>
<td>0</td>
<td>3 (50%)</td>
<td>2 (33.33%)</td>
<td>6</td>
</tr>
<tr>
<td>Traditional Centers</td>
<td>1 (50%)</td>
<td>1 (50%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>17</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Expectations from Govt. for Better Healthcare Delivery

<table>
<thead>
<tr>
<th>Needs</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure drinking water</td>
<td>31 (31%)</td>
</tr>
<tr>
<td>Regular cleaning of surrounding</td>
<td>16 (16%)</td>
</tr>
<tr>
<td>Primary Health Center</td>
<td>9 (9%)</td>
</tr>
<tr>
<td>All of the above</td>
<td>44 (44%)</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

References

Author’s Profile:

Mohammad Jawed Quereishi is rendering his services with the capacity of State Planning Manager – National Health Mission under Department of Health & Family Welfare, Government of Chhattisgarh State in India. He is Public Health expert having a vast knowledge of Public Healthcare delivery system in India and other low-middle income countries. He has completed Master o Public Health degree with securing first rank in university merit list at University College of Medical Education, Mahatma Gandhi University, Kottayam, India. He also completed MBA in Hospital Management and PG Diploma in District Health management. He graduated in Physiotherapy from Govt. Pt. Jawaharlal Nehru Memorial Medical College, Raipur. He represented India in many international conferences. He served his services as Research Coordinator in USAID India projects and External Consultant with Futures Group International in Ranchi for the assessment of Public Health facilities and RCH camps. Previous to this he also volunteered in many Public Health programmes.
Causes of Low Case Detection and Pulmonary Smear Positive Rates of Tuberculosis in Northern Region of Ghana

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Abstract

The study had two main broad but related objectives. The first objective was to determine the actual causes of under detection of pulmonary TB cases in the Northern Region of Ghana. Data was collected through administering a structured questionnaire; and collection of sputum samples from the respondents. The second objective was to determine the actual causes of low smear positive rates by assessing the capacity to effectively perform sputum smear microscopy for Acid Fast Bacilli (AFBs) in the district hospitals where the study was conducted. Collection of data here involved the use of a structured checklist for the laboratory and the staff who performed Tb microscopy. In all, 26 laboratory staff who performed Tb microscopy in the study district hospital laboratories were involved. The study lasted for a period of three months. The study revealed that, 41.2% of the study participants did not go to hospital when they fell sick. Out of this figure, 20.4% (21) attributed their inability to do so to poverty, 4.9% (5) to lack of access, 35.9% (37) to stigma, 28.2% (29) to cultural beliefs and 10.6%(11) attributed it to other reasons.

1.1 Introduction

Tuberculosis (TB), a disease of antiquity, continues to be a major public health problem worldwide. One-third of the world's over six billion population is infected with the tubercle bacilli with over two million deaths annually [WHO, 2005]. Available data on TB in Ghana indicate that the disease burden is high and TB remains an important cause of major disability and death in the country with a mortality rate as high at about 9 per 100 000 [WHO, 2011a]. With a population of over 20 million, the World Health Organization (WHO) estimates 44,041 new cases of all forms of TB in Ghana corresponding to a TB incidence rate of 211 per 100,000 inhabitants. Of these cases, 19,285 are expected to be smear positive cases [WHO, 2005]. In spite of these figures, The World Health Organization (WHO) estimates that Ghana is detecting only 26% of all forms of tuberculosis and 36% of sputum smear positive tuberculosis cases. This is well below the African regional average rate of 47% and WHO target of 70%. Despite a slight increase of notified tuberculosis cases from 12471 in 2006 to 14,479 in 2008, tuberculosis case detection rate in Ghana has not significantly increased over the years. A comprehensive review of the Ghana National Tuberculosis programme in 2007 and National Tuberculosis Health Sector Strategic Plan for Ghana (2009-2013) clearly identified low TB case detection as one of the main challenges facing TB control in Ghana [WHO, 2011a]. This situation is even much more serious in the Northern Region where the prevalence of tuberculosis is reported to be over eleven percent. Tuberculosis remains a major public health problem in the Ghana with the World Health Organization estimating that Ghana is reporting only twenty six per cent (26%) of case detection and thirty six per cent (36%) of smear positive cases [WHO, 2011a]. Even though these statistics are not encouraging for tuberculosis control, equally disturbing is the fact that, the Northern Region is reporting about 10% and 15% for both case detection rate and sputum smear positive rates respectively. These figures are far below the national estimates as reported by the World Health Organization. The impact of the disease on the socio-economic situation in the region is quite enormous and gives rise to the interest for this work.
1.1.1 History of tuberculosis

Mycobacterium tuberculosis (MTB) is a pathogenic bacterial species in the genus Mycobacterium and the causative agent of most cases of tuberculosis (TB) [Ryan and Ray, 2004]. Consumption, phthisis, scrofula, Pot’s disease, and the White Plague are all terms used to refer to tuberculosis throughout history. It is generally accepted that the microorganism originated from other, more primitive organisms of the same genus Mycobacterium. Contrary to previous findings that tuberculosis passed from animals to humans, scientific research has revealed that tuberculosis passed from humans to animals instead. Scientific work investigating the evolutionary origins of the Mycobacterium tuberculosis complex has concluded that the most recent common ancestor of the complex was a human-specific pathogen, which encountered an evolutionary bottleneck leading to diversification [WHO, 2011b]. Analysis of the mycobacterial interspersed repetitive units has allowed dating of this Mycobacterium tuberculosis complex evolutionary bottleneck to approximately 40,000 years ago, which corresponds to the period subsequent to the expansion of Homo sapiens out of Africa. This analysis of mycobacterial interspersed repetitive units also dated the Mycobacterium bovis lineage as dispersing approximately 6,000 years ago, which may be linked to animal domestication and early farming [McClelland, 1909]. Human bones from the Neolithic show a presence of the bacteria although the exact magnitude (incidence and prevalence) is not known before the 19th century. Still, it is estimated that it reached its peak (with regard to the percentage of the population affected) between the end of the 18th century and the end of the 19th century. Over time, the various cultures of the world gave the illness different names: yaksma (India), phthisis (Greek), consumption (Latin) and chakyoncay (Incan), each of which make reference to the "drying" or "consuming" effect of the illness, cachexia. Its high mortality rate among middle-aged adults and the surge of Romanticism, which stressed feeling over reason, caused many to refer to the disease as the "romantic disease."

The term phthisis first appeared in Greek literature around 460 BCE. Hippocrates identified the illness as the most common cause of illness in his time. He stated that it typically affected individuals between 18 and 35 and was nearly always fatal [McClelland, 1909] leading him to forbid physicians from visiting victims of the disease to protect their reputations. Although Aristotle believed that the disease might be contagious [Barnes, 1995], many of his contemporaries believed it to be hereditary. Galen, the most eminent Greek physician after Hippocrates, defined phthisis as the "ulceration of the lungs, thorax or throat, accompanied by a cough, fever, and consumption of the body by pus."

The tuberculosis epidemic in Europe, which probably started in the 17th century and which lasted two hundred years, was known as the Great White Plague. Death by tuberculosis was considered inevitable, being the principal cause of death in 1650. The high population density as well as the poor sanitary conditions that characterized most European and North American cities created a perfect environment for the propagation of the disease.

1.1.2 Tuberculosis in early civilization

In 2008, evidence for tuberculosis infection has been discovered in human remains from the Neolithic era dating from 9,000 years ago, in a settlement in the eastern Mediterranean [Daniel, 2004]. This finding was confirmed by morphological and molecular methods; to date it is the oldest evidence of tuberculosis infection in humans. Evidence of the infection in humans was also found in a cemetery near Heidelberg, in the Neolithic bone remains that show evidence of the type of angulation often seen with spinal tuberculosis [Daniel, 2004]. Some authors call tuberculosis the first disease known to mankind.

Signs of the disease have also been found in Egyptian mummies dated between 3000 and 2400 BCE. The most convincing case was found in the mummy of priest Nesperehen, discovered by Grebart in 1881, which featured evidence of spinal tuberculosis with the characteristic psoas abscesses [Daniel, 2004]. Similar features were discovered on other mummies like that of the priest Philoc and throughout the cemeteries of Thebes. It appears likely that Akhenaten and his wife Nefertiti both died from tuberculosis, and evidence indicates
that hospitals for tuberculosis existed in Egypt as early as 1500 BCE [Dubos and Jean, 1987]. The Ebers papyrus, an important Egyptian medical treatise from around 1550 BCE, describes a pulmonary consumption associated with the cervical lymph nodes. It recommended that it be treated with the surgical lancing of the cyst and the application of a ground mixture of acacia seyal, peas, fruits, animal blood, insect blood, honey and salt. The Old Testament mentions a consumptive illness that would affect the Jewish people if they stray from God. It is listed in the section of curses given before they enter the land of Palestine.

1.1.3 Ancient Asia

The first references to tuberculosis in Asian civilization are found in the Vedas. The oldest of them [Rigveda, 1500 BCE] calls the disease yaksma. The Atharvaveda calls it another name: balasa. It is in the Atharvaveda that the first description of scrofula is given. The Sushruta Samhita, written around 600 BCE, recommends that the disease be treated with breast milk, various meats, alcohol and rest [Zink et al., 2003]; and in Chinese literature it appears in a medical text written by Emperor Shennong of China (2700 BCE). The first classical text to mention the disease is Herodotus' Histories in which he relates how the generals of Xerxes abandoned the campaign against the Spartans due to a consumption [Zink et al., 2003].

Hippocrates and many others at the time believed phthisis to be hereditary in nature and in Book 1 of his Of the Epidemics, describes the characteristics of the disease [Chrisman and Kleinman, 1983]. Curiously, one prominent figure that disagreed with the hereditary nature of phthisis was Aristotle, who believed that it was in fact contagious while Galen proposed a series of therapeutic treatments for the disease, including: opium as a sleeping agent and painkiller; bloodletting; a diet of barley water, fish, and fruit. He also described the phyma (tumor) of the lungs, which is thought to correspond to the tubercles that form on the lung as a result of the disease [Hawken et al., 2001]. According to the 13th annual tuberculosis report of the World Health Organization (WHO) — published on World TB Day, March 24, 2009 — there were an estimated 9.27 million new cases of tuberculosis worldwide in 2007 [WHO, 2008a]. Although this figure represents an increase from 9.24 million in 2006, the world population has also grown, making the number of cases per capita a more useful measure of the problem; this figure peaked in 2004 at 142 per 100,000 and fell to 139 per 100,000 in 2007. An estimated 1.32 million people who were not infected with the human immunodeficiency virus (HIV) died of tuberculosis in 2007, as did an estimated 456,000 people who were HIV-positive. Prevalence and mortality rates appear to be falling in all six WHO regions. Thus, the Americas, the eastern Mediterranean, and Southeast Asia appear likely to meet the Millennium Development Goals target, set in conjunction with the Stop TB Partnership and the World Health Assembly, of halving tuberculosis prevalence and tuberculosis-related mortality between 1990 and 2015. This target will probably not be met by the African and European regions [Pitchenik, 1984].

Some 22 high-burden countries collectively account for 80% of the global tuberculosis burden. In 2007, the countries with the highest prevalence were India (with 2.0 million cases), China (1.3 million), Indonesia (530,000), Nigeria (460,000), and South Africa (460,000); of the estimated 1.37 million cases in HIV-positive persons, 79% were in Africa and 11% in Southeast Asia [Curry, 1968]. Disturbingly, there were an estimated 500,000 cases of multidrug-resistant (MDR) tuberculosis in 2007 (including 289,000 new cases); of these, 131,000 were in India, 112,000 in China, 43,000 in Russia, 16,000 in South Africa, and 15,000 in Bangladesh; 55 countries had reported cases of extensively drug-resistant (XDR) tuberculosis by the end of 2008. These last figures are reason for considerable concern and highlight a potential threat to our ability to treat tuberculosis, both in individual patients and in the context of a treatment program [Curry, 1968].

To achieve the target set out in the Global Plan to Stop TB, treatment of 1.4 million cases of MDR or XDR tuberculosis will be required in the 27 countries with the highest burden between 2009 and 2015. The cost of diagnosing and treating these cases was estimated at $16.9 billion, with annual costs increasing from $700 million in 2009 to $4.4 billion in 2015; the latter figure is 61 times the funding that is available in 2009. In higher-burden regions, the
proportion of tuberculosis cases that are multidrug-resistant may range from 1 to 14% or more. Of these cases, the proportions that are extensively drug-resistant may be as high as 21%. Even in the United States, where the number of MDR cases appears to be declining, the number of XDR cases is increasing. Although countries in Eastern Europe, the former Soviet Union, and China have a large number of MDR cases, reporting suggests that sub-Saharan Africa has a relatively low proportion of drug-resistant cases. However, the incidence of primary drug-resistant cases indicates that these areas may have the highest rates of transmitted MDR tuberculosis in the world [Pitchenik, 1984].

Tuberculosis is a disease of poverty, and the declining incidence in many relatively wealthy areas is not unexpected, but there are other parts of the globe where health systems are defective or simply overwhelmed and cannot cope, because of either a lack of funds and personnel or dysfunctional politics, which lead to the sloppy implementation of directly observed treatment (DOTS) programs and exacerbate the tuberculosis problem. [Pitchenik, 1984]. Resistance to any agent emerges rapidly if there is overt or covert monotherapy or noncompliance. Under less than ideal conditions, isoniazid mono-resistance also emerges rapidly. And in the absence of isoniazid, our most powerful bactericidal agent, the risk of resistance to rifampicin, the next-most-powerful bactericidal agent, increases, since neither pyrazinamide nor ethambutol (nor streptomycin) is particularly effective in preventing resistance in companion drugs [Pitchenik, 1984]. Once MDR tuberculosis has developed, there is little to stop the rapid acquisition of resistance to the remaining agents. Further progression to pre-XDR and XDR tuberculosis becomes only a question of time. Since this process will take place over some months, or even years, the patient remains infectious, and it is not surprising that transmission of MDR and XDR tuberculosis occurs, particularly in communities with a high incidence of HIV infection (Pitchenik, 1984).

1.1.4 TB surveillance in Ghana

The Village Volunteer (VV) and Community Clinic Attendant (CCA) concept was introduced in Ghana in 1970 to bring health services to the doorstep of the population. This was to change the over concentration of the health services’ resource that was used in tertiary care in the urban towns. The system served only a third of the population and also did not deal with the major causes of morbidity and mortality, which included malaria, diarrhoea and measles, diseases of rural Ghana [Bugri, 2005]. As more Rural Health Posts and Health Centres were being established, the CCAs and VVs were faced out. In the Northern Region where both health facilities and staff were very few, the Guinea Worm Eradication Programme (GWEP) reactivated the VV concept with a new role to facilitate surveillance on the Guinea worm disease. The Community Based Surveillance (CBS) system was piloted in the Northern Region as an expansion of the Village Volunteers surveillance system for the Guinea Worm Eradication Programme. The system was very effective for detecting Guinea worm cases which otherwise would not have come to any health facility since there was no effective treatment for the disease. The health seeking behaviour of the population in general in Ghana was poor; therefore, facility based surveillance only detects a small proportion of cases. The VVs services were expanded to cover other diseases that were easy to recognize and were of priority to the health services. The Northern Region proposed the introduction of the system for a countrywide application. UNICEF recognized the potential of this village based surveillance system and offered to support a nation-wide introduction of the system. Some Regions quickly introduced the strategy, others run into the problem of volunteerism [Bugri, 2005].

1.1.5 Vaccines

The first genuine success in immunizing against tuberculosis was developed from attenuated bovine-strain tuberculosis by Albert Calmette and Camille Guérin in 1906. It was called "BCG" (Bacille Calmette-Guérin). The BCG vaccine was first used on humans in 1921 in France [Bonah, 2005] but it was not until after World War II that BCG received widespread acceptance in the United States, Great Britain, and Germany [Comstock, 1994].
1.1.6 Treatments

As the century progressed, some surgical interventions, including the pneumothorax or plombage technique collapsing an infected lung to "rest" it and allow the lesions to heal—were used to treat tuberculosis [Wolfart, 1990]. Pneumothorax was not a new technique by any means. In 1696, Giorgio Baglivi reported a general improvement in tuberculosis sufferers after they received sword wounds to the chest. F.H. Ramage induced the first successful therapeutic pneumothorax in 1834, and reported subsequently the patient was cured. It was in the 20th century, however, that scientists sought to rigorously investigate the effectiveness of such procedures. In 1939, the British Journal of Tuberculosis published a study by Oli Hjaltestad and Kjeld Törning on 191 patients undergoing the procedure between 1925 and 1931; in 1951, Roger Mitchell published several articles on the therapeutic outcomes of 557 patients treated between 1930 and 1939 at Trudeau Sanatorium in Saranac Lake [Daniel, 1982]. The search for a medicinal cure, however, continued in earnest.

In 1944 Albert Schatz, Elizabeth Bugie, and Selman Waksman isolated Streptomyces griseus or streptomycin, the first antibiotic and first bacterial agent effective against M. Tuberculosis [Daniel, 1982]. This discovery is generally considered the beginning of the modern era of tuberculosis, although the true revolution began some years later, in 1952, with the development of Isoniazid, the first oral mycobactericidal drug [Daniel, 1982] advent of Rifampicin in the 1970s hastened recovery times, and significantly reduced the number of tuberculosis cases until the 1980s.

1.1.7 Current treatment strategies in Ghana

Ghana changed to Fixed Dose Combination (FDC) treatment regime in June 2007. All TB patients in Ghana are expected to be treated at health centres free of charge by taking a combination of specific anti-TB drugs such as isoniazid, rifampicin and ethambutol, and pyrazinamide under supervision for six to eight months to completely kill the TB bacilli. This strategy is called Directly Observed Treatment Short-Course DOTS [WHO, 1998a].

1.1.8 DOTS strategy

This comprises five elements for effective TB control. It requires accurate recording and reporting system to provide information for planning and maintaining adequate drug stocks.

1.1.9 Political commitment

The first of these elements is a clear and sustained political commitment by national governments is crucial if basic DOTS and the Stop TB Strategy are to be effectively implemented. Political commitment is needed to foster national and international partnerships, which should be linked to long-term strategic action plans prepared by NTPs [WHO, 2008a]. Strategic action plans should address technical and financial requirements and promote accountability for results at all levels of the health system; they should include TB-related and other relevant indicators, and – where appropriate – political commitment should be backed up by national legislation. Local partnerships with many potential contributors will help improve TB care in terms of access, equity and quality [WHO, 2008a].

1.1.10 Case detection through quality-assured bacteriology

Bacteriology remains the recommended method of TB case detection, first using sputum smear microscopy and then culture and drug susceptibility testing (DST) as well as strengthened laboratory network involving wide network of properly equipped laboratories with trained personnel necessary to ensure access to quality-assured sputum smear microscopy. This is likely to require additional investments in the laboratory network in many countries. The laboratory network should be based on the following principles of adoption of national standards in accordance with international guidelines; decentralization of diagnostic services, with high proficiency levels maintained; communication among members at various levels of the network; and functioning internal and external quality management, including
supervision [Shinnick et al., 2005]. Culture and DST services should be introduced, in a phased manner, at appropriate referral levels of the health system. Their functions should include diagnosis of sputum smear-negative TB, diagnosis of TB among HIV-positive adults and children, diagnosis and monitoring of response to treatment of MDR-TB, and testing related to periodic surveys of the prevalence of drug resistance. Maintaining the quality of the laboratory network depends on regular training, supervision and support, and motivation of laboratory staff. Best use should be made of existing public and private laboratories [Shinnick et al., 2005].

1.1.1 Standardized treatment with supervision and patient support

The mainstay of TB control is organizing and administering standardized treatment across the country for all adult and paediatric TB cases – sputum smear-positive, smear-negative, and extrapulmonary [WHO, 2007]. In all cases, WHO guidelines on patient categorization and management should be followed. These guidelines emphasize use of the most effective standardized, short-course regimens, and of fixed-dose drug combinations (FDCs) to facilitate adherence to treatment and to reduce the risk of the development of drug resistance. Services for TB care should identify and address factors that may make patients interrupt or stop treatment. Supervised treatment, which may have to include direct observation of therapy (DOT), helps patients to take their drugs regularly and complete treatment, thus achieving cure and preventing the development of drug resistance [WHO, 2006]. Supervision must be carried out in a context-specific and patient-sensitive manner, and is meant to ensure adherence on the part both of providers (in giving proper care and support) and of patients (in taking regular treatment). Depending on the local conditions, supervision may be undertaken at a health facility, in the workplace, in the community or at home. It should be provided by a treatment partner or treatment supporter who is acceptable to the patient and is trained and supervised by health services. Patient and peer support groups can help to promote adherence to treatment. Selected patient groups, for example prisoners, drug users, and some people with mental health disorders, may need intensive support including locally appropriate measures should be undertaken to identify and address physical, financial, social and cultural barriers – as well as health system – barriers to accessing TB treatment services [WHO, 2008a]. Particular attention should be given to the poorest and most vulnerable population groups. Examples of actions that may be appropriate include expanding treatment outlets in the poorest rural and urban settings, involving providers who practice close to where patients live, ensuring that services are free or heavily subsidized, offering psychological and legal support, addressing gender issues, improving staff attitudes, and undertaking advocacy and communication activities [WHO, 2007].

1.2 Problem statement

Available data on TB in Ghana indicate that the disease burden is high and TB remains an important cause of major disability and death in the country [Bass, 1989]. With Ghana's population of over 20 million, the World Health Organization (WHO) estimates 44,041 new cases of all forms of TB in Ghana corresponding to a TB incidence rate of 211 per 100,000 inhabitants. Of these cases 19,285 are expected to be smear positive cases [WHO, 2005]. In spite of the figures above, The World Health Organization (WHO) estimates that Ghana is detecting only 26% of all forms of tuberculosis and 36% of sputum smear positive tuberculosis cases. This is well below the African regional average rate of 47% and WHO target of 70%. Despite a slight increase of notified tuberculosis cases from 12471 in 2006 to 14,479 in 2008, tuberculosis case detection rate in Ghana has not significantly increased over the years [WHO, 2011a]. A comprehensive review of the Ghana National Tuberculosis programme in 2007 and National Tuberculosis Health Sector Strategic Plan for Ghana (2009-2013) clearly identified low TB case detection as one of the main challenges facing TB control in Ghana. This situation is much more serious in the Northern Region where TB case detection and sputum smear positive rates are reported to be about 10% and 15% respectively. [RHD, 2011]. These figures
are far below the national estimates as reported by the World Health Organization in the face of the adverse socio-economic impact of the disease in the Region, and gives rise to the interest for this study.

![Conceptual framework to improve case detection in Northern Region](image)

**Figure.1** Conceptual framework to improve case detection in Northern Region
(Adapted from WHO; STOP TB Department)

### 1.3 General objectives

To determine the causes of low TB case detection and pulmonary smear positive rates in the Northern Region.

### 1.3.1 Specific objectives

1. To determine the actual causes of low TB case detection.
2. To determine the causes of low pulmonary sputum smear positive rates by assessing the capacity of laboratories in the selected district hospitals in detecting and diagnosing TB cases effectively,
3. To compare the prevalence of pulmonary TB between males and females in the region.

### 1.3.2 Study questions

1. Is the Northern Region recording low pulmonary Tb case detection and sputum smear positive rates?
2. What are the factors causing low Tb case detection rates in the Northern Region?
3. What are the factors causing low pulmonary smear positive rates in the Northern Region?
4. Will the introduction of Health Extension Workers in the communities increase detection of Tb suspects?

### 1.4 Justification

One of the main strategies to control tuberculosis (TB) is to find and treat people with active disease but unfortunately, the case detection rates remain low in many countries. Thus, interventions are needed to find and treat sufficient number of patients to control TB. Several years after its introduction, CBS Volunteerism is grappling with a lot of problems. The need to move forward is undeniable but given the health seeking behaviour of the general population, the insufficiency of health facilities, poverty and lack of access to health services, there is no likelyhood to detect all cases of targeted diseases occurring in communities through facility-based surveillance system alone. The need to detect all cases and report is particularly necessary for the control of tuberculosis and possibly, its eradication. Therefore, grass root participation at the community level involving the Health Extension Workers who will be remunerated
adequately in the form of monthly salaries is necessary for effective disease surveillance system. Ghana’s effort of achieving the Millennium Development Goals indicators 23 and 24 by 2015 will be a mirage if efforts are not geared in that direction. To this end, the regions, districts and sub-districts will have to be encouraged to devise means of increasing case detection and treatment under the DOTS strategy. This is one of the reasons which stirred up enthusiasm in conducting this study. The other reason is the negative socio-economic impact of Tb in the Northern Region. Although there has not been any study on the demographic studies of the disease in the Region, records at the regional health directorate indicate that more males report to health facilities with Tb than females and since men are mainly the bread winners in this part of the country, families are adversely affected in such circumstances.

2.0 Literature review

2.1 Epidemiology of tuberculosis

Infectious disease remains the largest cause of illness and death in the world and TB is responsible for the greatest number of deaths among all infectious diseases. It is estimated that the TB bacteria has infected a third of the world’s human population and over 2 million people die of TB every year. Most of the illness and deaths due to TB occur in Asia and Africa. In Ghana like other countries in sub-Saharan Africa, TB is a major public health problem and in 2008, 14,479 cases of all forms of the disease were officially reported. The HIV pandemic, overcrowding in our cities and the emergence of antibiotic resistance among the causative agents are contributory factors [WHO, 2005].

2.2 Royal touch

With the spread of Christianity, monarchs were seen as religious figures with magical or curative powers. It was believed that Royal Touch, the touch of the sovereign of England or France, could cure diseases due to the divine right of sovereigns. King Henry IV of France usually performed the rite once a week, after taking communion. So common was this practice of royal healing in France, that scrofula became known as the "mal du roi" or the "King's Evil" [Maulitz and Maulitz, 1973]. The monarch (king or queen), sitting upon a canopied throne, touched the afflicted individual, and then presented that individual with a coin – usually an Angel, a gold coin the value of which varied from about 6 shillings to about 10 shillings – by pressing it against the afflicted' neck. Shakespeare's Macbeth describes the procedure quite accurately:

- Strangely visited people
- All swollen and ulcerous, pitiful to the eye
- The mere despair of surgery, he cures,
- Hanging a golden stamp about their necks,
- Put on with holy prayers: and ’tis spoken,
- To the succeeding royalty he leaves
- The healing benediction—Macbeth, Act 4, Scene 3, 171-7

2.3 Contagion

Girolamo Fracastoro became the first person to propose, in his work De contagione, that phthisis was transmitted by an invisible virus. Among his assertions were that the virus could survive between two or three years on the clothes of those suffering from the disease and that it was usually transmitted through direct contact or the discharged fluids of the infected, what he called fomes. He noted that phthisis could be contracted without either direct contact or fomes, but was unsure the process by which the disease propagated across distances [Comstock, 1994]

2.4 Nineteenth century

It was during this century that tuberculosis was dubbed the White Plague [Comstock, 1994]. Mal de vivir, and mal du siècle. It was seen as a "romantic disease." Suffering from tuberculosis was thought to bestow upon the sufferer heightened sensitivity. The slow progress of the disease
allowed for a "good death" as sufferers could arrange their affairs [Comstock, 1994]. The disease began to represent spiritual purity and temporal wealth, leading many young, upper-class women to purposely pale their skin to achieve the consumptive appearance. British poet Lord Byron wrote, "I should like to die from consumption," helping to popularize the disease as the disease of artists. George Sand doted on her phtitic lover, Frédéric Chopin, calling him her "poor melancholy angel" [Daniel, 2004]. In France, a least five novels were published expressing the ideals of tuberculosis: Dumas's La Dame aux camélias, Murger's Scènes de la vie de Bohème, Hugo's Les Misérables, the Goncourt brothers' Madame Gervaisais and GermaineLacerteux, and Rostand's L'Aiglon. Even after medical knowledge of the disease had accumulated, the redemptive-spiritual perspective of the disease continued in literature. (More recently the 2001 film Moulin Rouge is based in part on La traviata, which itself is based on La Dame aux camélias.) [Barnes, 1995].

2.5 Sanatorium movement

The advancement of scientific understanding of tuberculosis, and its contagious nature created the need for institutions to house sufferers. The first proposal for a tuberculosis facility was made in paper by George Bodington entitled “An essay on the treatment and cure of pulmonary consumption, on principles natural, rational and successful” in 1840. In this paper, he proposed a dietary, rest, and medical care program for a hospital he planned to found in Maney. Attacks from numerous medical experts, especially articles in The Lancet, disheartened Bodington and he turned to plans for housing the insane [Barnes, 1995]. Around the same time in the United States, in late October and early November 1842, Dr. John Croghan, the owner of Mammoth Cave, brought 15 tuberculosis sufferers into the cave in the hope of curing the disease with the constant temperature and purity of the cave air. Patients were lodged in stone huts, and each was supplied with a black servant to bring meals [Barnes, 1995]. One patient, A. H. P. Anderson, wrote glowing reviews of the cave experience: By late January, early February 1843, two patients were dead and the rest had left. Departing patients died anywhere from three days to three weeks after resurfacing; John Croghan died of tuberculosis at his Louisville residence in 1849.

Hermann Brehmer, a German physician, was convinced that tuberculosis arose from the difficulty of the heart to correctly irrigate the lungs. He therefore proposed that regions well above sea level, where the atmospheric pressure was less, would help the heart function more effectively. With the encouragement of explorer Alexander von Humboldt and his teacher J. L. Schönlein, the first anti-tuberculosis sanatorium was established in 1854, 650 meters above sea level, at Görbersdorf[Barves, 1995]. Three years later he published his findings in a paper Die chronischeLungenschwindsucht und Tuberkulose der Lunge: Ihre Ursache und ihre Heilung. Brehmer and one of his patients, Peter Dettweiler, became proponents for the sanatorium movement, and by 1877, sanatoriums began to spread beyond Germany and throughout Europe. In 1885, Edward L. Trudeau founded Adirondack Cottage Sanitarium, the first tuberculosis sanatorium in the United States, at Saranac Lake, New York[Kopanoff et al., 1988]. Peter Dettweiler went on to found his own sanatorium at Falkensteinin 1877 and in 1886 published findings claiming that 132 of his 1022 patients had been completely cured after staying at his institution. Eventually, sanatoriums began to appear near large cities and at low altitudes, like the Sharon Sanatorium in 1890 near Bost. Sanatoriums were not the only treatment facilities. Specialized tuberculosis clinics began to develop in major metropolitan areas. Sir Robert Philip established the Royal Victoria Dispensary for Consumption in Edinburgh in 1887. Dispensaries acted as special sanatoriums for early tuberculosis cases and were opened to lower income individuals. The use of dispensaries to treat middle and lower-class individuals in major metropolitan areas and the coordination between various levels of health services programs like hospitals, sanatoriums, and tuberculosis colonies became known as the "Edinburgh Anti-Tuberculosis Scheme [Kopanoff et al., 1988].
2.6 Twentieth century

At the beginning of the 20th century, tuberculosis was one of the UK’s most urgent health problems. A royal commission, entitled The Royal Commission Appointed to Inquire into the Relations of Human and Animal Tuberculosis, was set up in 1901. Its remit was to find out whether tuberculosis in animals and humans was the same disease, and whether animals and humans could infect each other [McCarthy, 2001]. By 1919, the Commission had evolved into the UK’s Medical Research Council. In 1902, the International Conference on Tuberculosis convened in Berlin. Among various other acts, the conference proposed the Cross of Lorraine be the international symbol of the fight against tuberculosis. National campaigns spread across Europe and the United States to tamp down on the continued prevalence of tuberculosis. After the establishment in the 1880s that the disease was contagious, TB was made a notifiable disease in Britain; there were campaigns to stop spitting in public places, and the infected poor were pressured to enter sanatoria that resembled prisons; the sanatoria for the middle and upper classes offered excellent care and constant medical attention [McCarthy 2001]. Whatever the purported benefits of fresh air and labor in the sanatoria, even under the best conditions, 50% of those who entered were dead within five years [McCarthy; 2001].

The promotion of Christmas Seals began in Denmark during 1904 as a way to raise money for tuberculosis programs. It expanded to the United States and Canada in 1907–1908 to help the National Tuberculosis Association (later called the American Lung Association). In the United States, concern about the spread of tuberculosis played a role in the movement to prohibit public spitting except into spittoons [Comstock, 1994].

During the last 100 years in the thousands of years-long history of tuberculosis, we have benefited from unquestioned scientific and clinical progress; but at the same time we have witnessed a global increase in the number of victims and a worsening of the efficacy of control manifested by a rising prevalence of drug resistance in many countries [Daniel, 2004]. Today, tuberculosis is relatively easy to diagnose; when the right combination of medications is made available and taken by the patient, the disease can be cured more than 95% of the time; and in certain targeted populations, the manifestations of the disease can be attenuated by vaccination and even prevented by chemotherapy. Despite these remarkable achievements, the estimated number of new cases of tuberculosis in the world during each of the last several years has steadily increased: from 8.0 million in 1997 to 8.3 million in 2000, and is expected to reach 10.2 million in 2005 [Styblo, 1989]. There are more people infected with Mycobacterium tuberculosis in the world this year than ever before, and from 1997 through 2000 the number of new cases of tuberculosis and the per capita incidence worldwide rose 1.8% per year and 0.4% per year, respectively. Although the overall global tuberculosis situation is deteriorating, it is actually improving in some countries. In the United States, for example, the incidence of newly reported cases of tuberculosis has fallen steadily since 1992 to its lowest level ever, and in 2002 (last report) was 5.2/100,000 population, a stunning public health accomplishment [WHO, 2005]. Such impressive progress, however, is found only in rich (industrialized) nations, although problems remain in many of their marginalized inner-city communities; moreover, the reverse is occurring in many poor (developing) countries, which is where the great majority, 86%, of the world’s total population lives. And not only are these destitute regions home to 95% of all the world’s cases of active tuberculosis and 98% of the nearly 2 million deaths from the disease each year, exactly the same countries are now being ravaged by the pandemic of human immunodeficiency virus (HIV) infection—the most powerful factor ever known to favor the development of tuberculosis [Styblo, 1989]. This historical review examines the century-long paradox of tuberculosis and illustrates an important point made by others [Perkins et al., 2006]. The conquest of tuberculosis by medical advances alone will never occur until the prevailing global inequities of wealth and health care are corrected. Reversing global tuberculosis (TB) incidence by 2015 is one of the Millennium Development Goals [Styblo, 1989]. Prevalence and death rates (indicator 23) and the proportion of cases detected and cured under a directly observed treatment strategy (DOTS) (indicator 24) are used to measure progress towards this goal. For indicator 24, the World Health Organization (WHO) has formulated the following
goals: a case detection rate of 70% and a cure rate of 85%. If both targets are achieved, the effect on TB transmission will be considerable [Borgdorff et al., 2000, 1998].

One of the main strategies to control tuberculosis (TB) is to find and treat people with active disease but unfortunately, the case detection rates remain low in many countries. Thus, we need interventions to find and treat sufficient number of patients to control TB [Borgdorff et al., 2000].

2.7 Spread of TB

TB is transmitted primarily by tiny airborne particles (droplet nuclei) expelled by a person who has abundant TB bacilli in the lungs through activities such as coughing, sneezing, singing and talking. In addition, aerosols created in the laboratory during smear preparation for staining and culture can spread the TB bacilli. Eating or drinking contaminated animal products especially cattle products such as beef and milk are the main route. M. bovis (bovine TB) is transmitted to humans. This is one of the reasons why cow milk is pasteurised by heating before drinking (Rieder et al., 1997).

2.8 Disease formation

When moist droplets of saliva or mucous containing tubercle bacilli are produced by an infectious person, these droplets travel far and get suspended in the air for several hours. These aerosols of infective particles may be inhaled by another person. If the bacilli establish themselves in the lungs of the person and begin to multiply, then primary infection has occurred. Among those who become infected nearly 90% never manifest the disease and the bacilli remain dormant within the body. Only in small numbers – 10% does the primary infection develop into progressive disease. Development of the disease depends on the individual susceptibility. HIV increases the risk of getting TB disease due to lower immune status. Whereas there is 10% life time risk of TB in HIV negative individuals, there is 10% annual risk of TB in HIV positive individuals [Kochi, 1991]. Disease signs and symptoms include persistent cough which can productive, sputum production which may be bloodstained (haemoptysis), chest pain, shortness of breath, fever, night sweats, fatigue, weight loss, poor appetite and general feeling of illness (malaise). Although most TB disease affects the lungs (pulmonary), TB can occur in almost any part of the human body as disseminated disease (extra-pulmonary) [Janz and Becker, 1984].

3.0 Material and methods

3.1 Material’s used

- Sputum container (wide mouthed and transparent) was used to collect and store sputum
- A wire loop of internal diameter 3mm was used to spread sputum on a microscope slide
- A new and clean slide
- A Diamond pencil was used to put identification number on the slides
- Forceps was used to hold smeared slides over Bunsen burner
- Bunsen burner was used to fix smears on the slides and also used to flame the smears during staining.
- Staining racks were used to arrange slides for staining
- Slide racks were used to dry stained slides
- A binocular microscope was used for microscopy
- Lens tissue and tissue paper, were used for cleaning the objective lens
- Discarding jar containing 5% phenol served as disinfectant
- Sand bottle was used to disinfect wire loops
3.2 Stains and Reagents used for Smear Examination

(i) 3% stock Carbolfuchsin stain and 0.3% working solution.
(ii) 20% H$_2$SO$_4$ solution for decolourisation
(iii) 0.3% methylene blue for counter staining decolourised material in smear
(iv) Tap water for rinsing the smears
(v) Immersion oil (type A) for examination
(vi) Alcohol (> 95%) for cleaning 100x objective lens

3.3 Procedures for preparation of stains

All the stains and reagents were prepared, stored and used according to Standard Operating Procedures (S.O.P’s):

3.3.1 Fuchsin alcoholic stock solution (3%) (Solution A)  
30 g of basic fuchsin powder was weighed into 1000 ml of 95% alcohol and shook well until powder was completely dissolved in the ethanol. This solution was filtered before staining.

3.3.2 Aqueous phenol solution (Solution B) 50 g of Phenol crystals were heated until liquefied and this was added to 900 ml of distilled water.

3.3.3 Working Solution (0.3% Alcoholic fuchsin) 100 ml of Solution A was added to 900 ml of Solution B.

3.3.4 Decolourising agent (20% aqueous sulfuric acid solution) 200 ml concentrated sulfuric acid was poured into 1000 ml of distilled water in an Erlenmeyer flask. The concentrated sulfuric acid was poured slowly, allowing it to flow along the side of the flask.

3.3.5 Methylene blue counterstaining solution (0.3%) 3g Methylene blue chloride powder was dissolved in 1000 ml distilled water, mixed thoroughly until the methylene blue powder was completely dissolved.

3.4 Fixing

Dried smears were fixed by holding them with forceps and passing them side up over the flame 2-3 times for about 4 seconds each time. The slides were placed on dryer with smeared surface upwards, and air dried for about 30 minutes.

3.5 Staining

Fixed slides were placed on the staining rack in serial order, smeared side up, separated by a 1 cm gap, and never touched one another and were flooded individually with filtered 0.3% carbolfuchsin working solution. Slides were heated from underneath with the flame of an alcohol soaked cotton swab until vapour starts to rise. The slides were covered with the hot, steaming carbolfuchsin for 5 minutes. The slides were allowed to cool for about 5 minutes, rinsed gently with water to remove excess carbolfuchsin, and excess water tipped to drain off.

3.6 Decolourizing

Slides were flooded with the 20% sulfuric acid solution and allowed to stand for 3 minutes, after which the red colour of carbolfuchsin had almost completely disappeared. Slides were gently washed with water to remove the sulfuric acid and the excess stain; drained off excess rinsing water from slides.

3.7 Counterstaining

Covered slides individually with 0.3% methylene blue counterstaining solution which is the 0.3% methylene blue and allowed to stand for 1 minute, rinsed slides individually with water, drained water off the slides, which were then allowed to air dry.

3.8 Ziehl – Neelsen Staining procedure intervals used

1. Staining for 5 minutes
2. Decolourising for 5 minutes
3. Counterstaining for 1 minute
3.9 Microscopy

A binocular microscope with two objectives, a 40 x magnification objective and an oil immersion 100 x magnification objective and eyepieces of moderate magnification (10x) was used for the examination of the smears. A drop of immersion oil was placed on a dry stained slide to increase the resolving power of the objective. To prevent cross contamination by AFB, the immersion applicators did not touch the slides. Oil immersion in the form of synthetic hydrocarbons and advanced polymers with a refractive index of 1.5, nondrying and non-hardening, with no solvent capability on the smear was used. Acid Fast Bacilli, the bacteria which cause tuberculosis appeared pinkish red in a bluish background as shown in fig A below.

3.10 World Health Organization/International Union against Tuberculosis and Lung Disease (WHO/IUATLD)

The WHO/IUATLD grading system was used as shown below (WHO, 2004)

- No AFB in at least 100 fields –negative
- 1-9 AFB found in 100 fields- Scanty (exact No)
- 10 to 99 AFB in 100 fields +
- 1 to 10 AFB per fields in at least 50 fields ++
- 10 AFB per field in at least 20 fields+++ 

3.11 Study Design

The study design for this research was cross sectional.

3.11.1 Study Area

Profile of region
The Northern Region is one of the 10 administrative regions of Ghana with a total land area of about 70,384 sq km, about 1/3rd of the land area of the country. It is located between latitude 8:30” and 10:30” North and lies completely in the savannah belt with mainly 2 seasons, the dry and rainy seasons.

### 3.11.2 Borders

It has the Republic of Togo and La Cote D’Ivoire to the East and West respectively as its international neighbours. Further south, the region shares boundaries with the Brong-Ahafo and Volta Regions and to the north, it shares borders with the Upper East and Upper West regions.

### 3.11.3 Population characteristics and settlement patterns

The Northern Region is the least densely populated area of Ghana. The 2010 census projection report gives the regional population as 2,468,557 with a growth rate of 2.9%. There are 20 districts and between these 20 districts we have a total of 75 sub-districts. In all we have 12 Hospitals, and presently 10 of the hospitals provide TB microcopy. Every TB patient has a treatment supporter who ensures that TB medications and other support are provided for all patients on the TB register. The N/R is divided into 20 political administrative districts. There are 94 Health Sub-Districts, most of which correspond with the local council zones. The population is characteristically distributed in small settlements with population of 200 – 500 people. There are over 5,000 settlements in the Region, out of which 54.4% are rural communities with population less than 200 people. The distances between settlements are far apart. This peculiar pattern of distribution of population in the Region has adverse implication for health service delivery, as SDHTs going on out-reach travel over long distances only to reach a small proportion of their target population. A reasonable proportion of the population is in “overseas” areas in 9 of the 20 districts. These are the East Gonja, Kpandai, West Gonja, Central Gonja, West Mamprusi, Nanumba South, Gushegu, Karaga and Tolon/Kumbungu districts. These populations can only be accessed from neighboring regions and or districts or only during the dry season. In the Central Gonja, East Gonja and Kpandai districts, several villages are completely surrounded by the Volta Lake (NRHD; 2012)
3.12 Study population

3.12.1 Inclusion criteria

The respondents, fourteen years and above who showed signs suggestive of tuberculosis such as persistent cough, either productive or not productive lasting more than three weeks; fever, weight loss, night sweats, chest pain and/or haemoptysis.

3.12.2 Exclusion criteria

Migrant populations e.g. nomadic, known TB clients were excluded and young children below 14 years. Nomadic populations were excluded because their presence in the communities is transient and they can leave these communities at any time; as such their inclusion in intervention programs such as this study will eventually affect long term planning. Young children often times are unable to produce sputum for smear microscopy; hence their exclusion from the study.

3.13 Sample size

1.1.1 Sample size

A total of Two Hundred and Fourty six respondents were selected using Base sample size formula shown below:

\[ N = \frac{t^2 \times p(1 - p)}{m^2} \]

where:
- \( N \) = required sample size
- \( t \) = confidence level at 95% i.e. standard Z-score of 1.96
- \( p \) = estimated prevalence of tuberculosis in northern region (20)
- \( m \) = margin of error 5% i.e. alpha=0.05

\[ \frac{(1.96)^2 \times 0.20(1 - 0.20)}{(0.05)^2} = \frac{3.8416 \times 0.16}{(0.05)^2} \]

\[ \frac{0.6146}{0.0025} = 245.84 \approx 246 \]

- \( N \) was rounded up to 250 samples.

3.14 Sampling techniques

Purposive sampling technique was used. Two Health Extension Workers who were members of these communities were recruited, trained and introduced to the communities. They educated the community members on the need for their involvement in the study in their local languages. Each community selected four key informants who will report Tb suspects to the Health Extension Workers. Structured questionnaires capturing the demographic information, health seeking behavior, barriers to health seeking, marital status educational levels, occupation, ethnicity and geographical location were filled for patients who met the inclusion criteria and were made to produce two sputum samples; one on the spot and the other the following morning. In addition, these Health Extension Workers were in the hospitals to ensure Tb suspects were roped in. Fifty participants were selected and each participant produced two sputum samples giving a total of a hundred samples for each district. For the laboratories, data collection involved the use of a structured checklist capturing information on the physical structure of the lab, human resource of the lab and competency levels of the personnel in Tb microscopy.
3.15 Statistical analysis

The data collected from the patients and those collected from the laboratories were entered into Epi Info version 7.00 and analyzed.

3.16 Data collection

The main tools that were used for the data collection were sputum; after filling a questionnaire from respondents who met the inclusion criteria; and structured checklist for the laboratory.

3.17 Ethical clearance

Ethical clearance was sought from the Ghana Health Service through the Northern Regional Health Directorate to carry out the study in the region. This was granted through a letter written by the Directorate and signed by the Regional Director of Health Service seeking permission from the Directors of Health service of the four districts as well as the Tamale Metro Health Directorate.

3.18 Research limitations

- The time frame within which this research was carried out was limited as such some areas such as public –private-partnership in Tb case detection and mortality audits on Tb could not be carried out which in my opinion could have made much impact on the study outcome. It is my hope that future researches would include these areas.
- Unavailability of Purified Protein Derivative (PPD), the kit used for carrying out Manteux test excluded young children below the age of fourteen from the study due to their inability to produce good quality sputum. Future studies in this area should include Manteux test in order to capture children in this age group.

4.0 Results

The graph below sums up the various reasons for some of the patients who participated in the study not to attend hospital when they fell sick.

![Graph](image)

**Figure 4:** Reasons for some patients not attending hospital (*some reasons for under-detection of Tb in the study communities*)

Out of the two hundred and fifty respondents who participated in this study, one hundred and three, representing 41.2% said they did not attend hospital and they attributed this to the following reasons:

- **Poverty (Lack of funds for Transport)**

  From the study it came up that poverty was a major factor which hindered some patients from hospital attendance; as twenty-one (20.4%) of them attributed their inability to go to the hospital to poverty. This is in conformity with studies done elsewhere in which it has been established that TB thrives in conditions of poverty and can worsen poverty (WHO, 2005).

- **Lack of access to Health Facility**

  It was realized from the study (Fig 4.1) that, 5 (4.9%) of the respondents did not attend hospital due to lack of access to a health facility. This figure may be low comparatively but
because TB is an infectious disease, these few people could serve as source of infection to other members of their communities. Because of the poor distribution of clinical services especially in the rural, hard to reach communities of Northern Region, and the difficulties that the sick encounter gaining access to and effectively using health services, only a few of new cases are ever diagnosed.

- **Fear of Stigmatization**
  In this study, thirty-seven (35.9%) out of the one hundred and three respondents who did not attend hospital cited fear of stigmatization. It was revealed from this study that TB was perceived as a form of curse from the gods when one acted contrary to what was seen as the norm. Due to this fear of being seen in this regard, they preferred hiding their sickness.

- **Cultural Beliefs**
  Twenty-nine (28.2%) out of the one hundred and three patients who did not attend hospital attributed it to their cultural beliefs. Their belief, to a large extent was that tuberculosis was a consequence of a curse which could only be reversed by spiritualist rather than seeking intervention through orthodox medical practice. Some thought that seeking cure from the hospital was like hastening ones. Death should the disease be as a result of a curse.

- **Other Reasons**
  Of the one hundred and three respondents who did not attend hospital to seek medical assistance, eleven (10.6%) of them attributed other reasons aside those above as being the causes for their inability to attend hospital. These reasons included predominantly using traditional healing methods as some traditional healers in these communities claim to have cure for tuberculosis using herbs.

![Figure 5: Gender distribution](image)

From the study it was revealed that male respondents were more than female respondents as shown above in Fig 4.2. The male to female ratio being 1:2. This confirms many studies that have been conducted across the world in this area of research;

4.1 Educational level of participants

From the frequency distribution of education (Fig.4.13 below), it could be seen that, respondents without formal education were in the majority; they comprised 84(33.6%) followed by those with junior high school education 56 (22.4%), then tertiary education 43(17.2%), primary school education 34(13.6%) and those with senior high education 33(13.2%).
4.2 Occupation of respondents versus TB status

Respondents were sampled from twenty professional groups and as can be seen from the occupation distribution graphs (Fig 4.14) farmers were the majority of the participants; being ninety (36%) out of the total two hundred and fifty sampled. Teachers follow with 36(14.4), Students -26 (10.4%), traders -41 (16.4%), drivers-13 (5.2%), health staff-7(2.8%), Seamstress-7(2.8), housewife -62(4.4%), Banker-4(1.6%), Unemployed-4(1.6%), Mechanic-3(1.2%), Mason-3(1.2%), Accountant-2(0.8%), Hairdresser-2(0.6%) Truckpusher, fishing, Herbalist, Galamsey operator, retired security personnel as well as security services contributing one each. In all, 103(41.2%) participants’ sputum samples were confirmed by the sputum smear microscopy as being positive for Acid Fast Bacilli. Out of this figure, farmers contributed 44 (42.7%) followed by traders 41 (20.4%), teachers 15 (14.6%), students 11 (10.7%), health staff 7(6.8%), unemployed 4 (3.9%), Driver, Hairdresser and Seamstress 2 (1.9%) each, and Truckpusher, Mechanic House wife and Herbalist contributing 1 (0.0097%) each.
4.3 Results from laboratory checklist

Laboratories of the health facilities in the study area were assessed on their capacity to do effective microscopy of mycobacterium tuberculosis based on a checklist designed for this study. It comprised parts labeled A–E. Part A dealt with the physical structure of the laboratory. The results are given in Table 1 below.

4.4 Physical structure of laboratory

From Table 4.1, below, it is seen that, 80% of the facilities had adequate ventilation, all the facilities had their laboratory unit separated from other areas, 60% of the laboratories were restricted to authorized persons in terms of access and 80% of the laboratories had the bench for sputum smear preparation separated from other work benches. The physical structure of the laboratory in all cases was good from the above analysis.

Table 1: Physical structure of the laboratory

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate ventilation</td>
<td>1</td>
<td>20.00%</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>80.00%</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>100.00%</td>
</tr>
<tr>
<td>Laboratory separated from other areas</td>
<td>5</td>
<td>100.00%</td>
</tr>
<tr>
<td>Access to the laboratory restricted to authorized persons</td>
<td>2</td>
<td>40.00%</td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>60.00%</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>100.00%</td>
</tr>
<tr>
<td>The bench for smear preparation separated from other work benches in the lab</td>
<td>1</td>
<td>20.00%</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>80.00%</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Part B comprised category of staff i.e. human resource and competency assessment of these staff. The results are shown in Table 2 below:

4.5 Human resource

4.5.1 Laboratory staff strength

It could be seen from the table above that, apart from the Tamale teaching hospital, the rest of the facilities lacked adequate personnel resulting in situation where untrained personnel perform tuberculosis microscopy. Even in the situation where there are adequate numbers of staff such as was the situation with the teaching hospital, they may either be newly recruited and might lack the requisite skill for effective microscopy, or they could be old staff who are not motivated enough to do same. This situation will contribute to increased false negative results as it is the current situation in the northern region.
4.5.2 Competency assessment of lab staff

Figure. 9: Knowledge of TB disease by laboratory staff

Figure. 10: Observation made on patient preparation

Figure. 11: Observation made on labelling of slides

Figure. 12: Observation made on preparation of ZN stains
4.6 Assessment on TB microscopy

Three participants in observation A had a very good mark for microscopy and two participants had fair. In observation B, there were five participants with one of them having a very good grade, two having a good grade and the other two having a fair grade. In observation C, there were five participants with one having a very good grade, one good grade, two fair and one poor. Those with the fair and poor grades are the gray areas in Tb microscopy leading to false negatives.
Figure. 16: Observation made on result delivery

Figure. 17: Equipment, Reagents and Supplies

Figure. 18: Internal/External Quality Assurance

As can be seen from Fig. 4.12 the study revealed that 90% of the facilities did not experience logistics or resources stockouts within the last three months preceding the study which could have prevented TB microscopy in the facilities. Also, 90% of these facilities did not store slides for testing new batches of stain. In all the facilities slides were not rechecked by the laboratory supervisor after initial observation to corroborate and document results. Again, 40% of the laboratories were not involved in any form of external assurance programs. Those facilities which were involved in eternal quality assurance did not have records on them.

5.0 Discussion

Comparing appendices, A and B to table C, it could be seen that before the interventions, percentage monthly average positive for the districts was 8.3% but after these interventions it
moved up to 33% showing that there was a significant increase of tuberculosis suspects who were identified and confirmed within the intervention period. Stigma against Tb patients was top among the barriers to seek medical intervention followed by cultural beliefs, poverty, other reasons and lack of access to health facility in that order. With this trend, there will be the need for maximum effort to be able to break through especially the cultural barrier as well as those of stigma and others.

There is a long history of documented linkages (mainly from Europe and the United States) between TB and poverty at societal, community and patient levels. Although confirming that documentation on linkages between TB and poverty in low-income countries is far from comprehensive, the fundamental conclusion from these reviews is that, “while TB is not exclusively a disease of the poor, the association between poverty and TB is well established and widespread”(WHO, 2005). Throughout the world, poor people and those from disadvantaged social groups suffer more illness and die sooner than the more privileged. Poor and socially excluded people face greater exposure to many health threats, and when they fall sick they are much less likely to receive adequate care. Social factors including the effects of poverty account for the bulk of the global burden of disease and death and for the largest share of health inequalities between and within countries. In high income countries, the average estimated incidence of tuberculosis (TB) is 10/100 000; in low-income countries it is 20 times higher (WHO, 2005). TB is much more common in poor communities because overcrowding is common - people are likely to live in dark, unventilated rooms, and thus more likely to be infected by TB and to receive large doses of the bacilli. Patients’ resistance to the disease is reduced, particularly by malnutrition and other diseases such as HIV. TB makes patient and family poorer because the patient will probably be unable to work Patients in remote areas may not be aware of or able to access free treatment and may end up paying more than they can afford to traditional healers or doctors who are not experts in TB. Where treatment and drugs are free there is often a cost of travelling to clinics, both to collect drugs or to have each dose supervised.

Studies suggest on average patients lose 3-4 months of work time. The annual loss is equivalent to loss of 20-30% of the family household income. If a patient dies the family loses about 15 years of income. The presence of a TB patient in a household entails major reallocation of time and resources towards care of the patient, and away from work. If wife develops TB it is not uncommon for the husband to leave her. For female members of the family the stigma attaching to TB may prevent marriage (WHO, 2005).

The family may sell assets because of reduced income – pushing them further into poverty and losing their future potential for earning. The family may end up begging. Patients and their families may stop using water from the public tap because it costs too much – and go back to using open water sources. WHO's commitment to the promotion of equity and pro-poor policies in its disease prevention and control activities is based on the recognition of poverty as a major barrier to health and health care. In the case of tuberculosis (TB), the links between poverty and disease burden have been documented for many years. This document addresses the integration of national TB control programmes on the practical issues involved and options for action. The following six principal steps are recommended and described in the document (Mata, 1985). Payments for transport to and from health facilities for patients and their caregiver(s) for several different visits make up a large proportion of costs before diagnosis is established. If treatment requires frequent travel (e.g. for observation of treatment), then these transport costs may continue to accumulate after diagnosis, even if the distances travelled are not very great. The time lost in repeat visits to health providers is also costly in various ways, for instance through opportunity costs including lost earnings, neglected household responsibilities and lost productivity. Overall, therefore, costs to patients can easily accumulate even when diagnostic tests and drugs for TB treatment are provided free of charge. Although aggregate costs for poor people tend to be lower in real terms than costs for other social groups, costs relative to annual or monthly income are much higher for poor people than for others. In the example illustrated in
Table 1 the poor spend less on diagnosis than the non-poor but the overall costs faced by the poor are extremely high relative to their incomes (WHO, 2005).

Cultural barriers may be difficult to overcome but promotion of community mobilization, ensuring that staff attitudes do not reinforce stigma, advocacy for worker protection to avoid loss of work as a result of TB, ensuring that the TB health promotion plan takes account of poor and vulnerable groups and exploring possibilities for referral mechanisms from traditional health-care providers to the health centres may gradually overcome the cultural and stigma barriers. Poverty might be reduced if these barriers are overcome in that the study revealed that 90 out of the total respondents of 250 were farmers and out of this, 44(48.9%) had TB; this translates to 37.6% of total TB cases. Also, 103 out of the 205 respondents did not attend hospital and this figure comprised 90(87.4%) farmers. The involvement of Health Extension Workers in sputum collection and treatment improved smear-positive case detection and those confirmed as being positive were roped into care under DOT. This meant health care was brought possibly closer within access of clients. This could be applied in settings with low health service coverage such as rural northern region and in countries where there is shortage of health workers such as Ghana.

Ideally, laboratories are supposed to prepare slides for quality control purposes but none of the laboratories did so. The laboratory registers in all the facilities were not properly and completely registered. Also there were inadequate patient addresses, results of some patients not entered in the register and months of follow-up not indicated. Indeed the study revealed that both quality control and quality assurance were major deficiencies which led to many false negatives in the laboratories contributing to the overall low numbers of case identification and low aputum smear positive cases recorded over the years in the region.

Inadequate number of qualified personnel working in the laboratories was another major factor identified. Numbers of clients to the laboratories have been increasing with the introduction of the National Health Insurance scheme and this had led to an increase in the turnaround time for laboratory investigations. With this increase in the volume of work, Tb suspects were those most affected because there was no motivation in that direction and so the sputum samples were kept till the volume of work was very minimal before they were worked on or in some situations the laboratory staff worked on them after close of work in the evening. This means they worked on them under duties and stress. This resulted in some of the weak positives(+) being reported as negative. Modification of schedules for Tb diagnostic and treatment services to meet local needs; developing the communication skills of staff; discouraging staff from discriminating against poor patients; using total quality management to ensure that services remain responsive to the needs of the poor; engaging in health service decentralization to promote capacity strengthening at the periphery and inclusion of Tb control as a district-level priority.

Encouraging public-private mix for DOTS initiatives in the form of a policy, provision of TB diagnosis and treatment in the workplace; extension of Tb microscopy services to poor communities, provision of diagnosis and discouragement of unofficial charges to patients may all go a long way to encourage the poor to attend hospital. Although from this study lack of access to health facility contributed only 4.9% of the reasons for not attending hospital, this could be overcome by extension of diagnostic and treatment services to remote, poor communities; bringing patients from remote areas to Tb service centres and development of a community-based Tb care model.

From the above analysis it can safely be said that if cultural and stigma barriers are overcome, most rural people will seek medical intervention at health centres or hospitals whenever they fall sick and this will keep them healthy and productive by working to break through the poverty barrier. Also, if these challenges are addressed and sustained, staff attitude towards Tb microscopy will improve and this ultimately will significantly contribute to Tb control in the region.

In order to effectively control TB, there is the need for collaboration on the part of the government with private health service providers. This however is a huge challenge in the
region in the sense that, there is no single private health provider in the region which provides service to Tb clients. In the first place, there are only a few private health service providers in Tamale, the regional capital and none, at all in the catchment areas of the districts selected for this research and due to that public–private partnership will be a challenge in these areas. Most high-resource countries have large private health-care systems, including laboratories, which provide high-quality care and services. Although the quality of care correlates with resources, factors such as laboratory quality standards and regulations, mandatory reporting of cases of TB and other infectious diseases, and specific public initiatives to work with private providers have also been responsible for successful integration of disease control programmes with private health care (Kusznierz et al., 2004; Shinnick et al., 2005).

In Ghana there is the need to encourage private sector participation in TB case detection because according to Tuberculosis Assistance Program for Ghana (2007-2010), out of 601 medical laboratories (both public and private) existing in 2007, only 211(35%) were providing sputum smear microscopy and this could be built upon by way of motivation especially to the private operators. Since TB microscopy is free, private service providers may not want to venture into it but if they are provided with support in the form of chemistry and haematology reagents for their services, it will lure them into coming on board. Strict monitoring must be instituted thereafter to assure the quality of testing and reporting in the private laboratory sector. Also the National TB program must develop strategies to enroll these private laboratories in EQA programmes and require reporting and referral of TB cases.

As seen in Fig 4.12 about 90% of the activities listed under quality assurance were not adhered to by the laboratories. This is in sharp contrast to what pertains in the developed countries which have taken advantage of new technologies that provide rapid detection,

6.0 Conclusion and recommendations

This study showed that, two reasons; (1) Poor health seeking behavior as a result of poverty, lack of access to health facilities, fear of stigmatization, cultural beliefs and other factors on the part of the people and (2) Lack of capacity on the part of the laboratories to diagnose TB through effective microscopy.

6.1 Recommendations

1. Laboratories play a pivotal role in performing research, especially operational research that supports evidence-based decisions for guiding laboratory practice, it is recommended that, whenever possible, such research should be performed in the district hospital laboratories. Research carried out to improve diagnostic methods and techniques can be published in the literature and guide Ghana’s decisions about implementing changes in technology and procedures. The zonal Public health laboratory in Tamale has the capacity to perform operational research, and must be encouraged in the form of training in research methods, and by developing partnerships with research-focused institutions such as universities to carry these out. It is important however, that such encouragement if offered, the zonal public health laboratory balances research activities with priority initiatives to monitor and support the laboratory network. This will serve as an incentive to the staff who in turn will give off their best to support Tb control in Northern Region.

2. There is the need for an intensive and sustained education in the Region about TB, its etiology, symptoms and mode of transmission since from the study, 24% and 15.2% of the respondents who did not seek medical intervention attributed it to cultural beliefs and other reasons respectively.

3. Another area of major concern is the stigma associated with the disease. This accounted for 35.9% of the study subjects who did not seek medical attention. It is recommended that intensive education be carried out in the region that direction. This can be effectively executed by targeting the community and opinion leaders who will disseminate the information down to community members.
4. There is the need for continuous training and capacity building of laboratory staff in Tb microscopy and quality assurance to ensure effective diagnosis of TB.

5. Trained and qualified laboratory personnel should be encouraged to accept postings to the district hospitals in order to strengthen laboratory services at the periphery. This encouragement could be in the form of rural incentives as well as career and professional development.

6. The laboratory personnel should be monitored to ensure that they perform routine quality control procedures, and that all Standard Operating Procedures (SOPs) for sputum smear examinations are followed; good maintenance of the TB laboratory register is observed, proper management of reagents and laboratory supplies, good maintenance of microscope, and that they work closely with personnel involved in EQA and Tb control programme.

7. Even though there are a few private health facilities in Tamale and virtually none in those other districts where the study was carried out, those few should be motivated to take up diagnosis of suspected Tb clients as well as managing and treatment of laboratory confirmed patients. The motivation, aside the free sputum microscopy reagents, slides, containers and grease pencils could be in the form of other reagents such as those of chemistry and haematology such that additional income could be generated for the private service providers.

8. It is important to provide sputum smear microscopy services that are accessible to the entire population, and yet maintain an acceptable level of technical proficiency. To accomplish this objective, a network of laboratories with competency in acid-fast sputum smear microscopy, overseen by a National Tuberculosis Reference Laboratory, is required. The National Tuberculosis Reference Laboratories should support the implementation of QA activities in the regions.

There is also the need for integration of TB with other programs such as malaria and HIV such that in doing monitoring for say malaria, work on TB could be monitored alongside. This is because, running parallel programs has not helped achieve much.

References


Staff Satisfaction to the Introduction of New Ways of Working in General Hospitals in Nigeria

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Abstract

**Purpose:** The study examines the level of satisfaction that staff of General Hospitals in Nigeria hope to derive from the introduction and implementation of ‘New Ways of Working’ in General Hospitals in Nigeria.

**Methodology:** The study was conducted in a typical General Hospital in Nigeria. Satisfaction level to the introduction and implementation of New Ways of Working was assessed by self-administered and pretested questionnaire. Descriptive statistics to explain the demography of the respondents were done; mean score and standard deviation values were used to examine the variables.

**Findings:** The average mean score of the satisfaction level to the components of new ways of information if introduced was (3.52 ± 1.54). Respondents showed highest level of satisfaction to the component afford them a free hand to make impactful decisions on their work schedule (2.20 ± 1.18), and least level of satisfaction when they are provided with means of deriving more information about their work when they are provided with information technology within the hospital premises (4.95 ± 1.85).

**Research Limitations:** More General Hospitals should be involved in new studies for more generalizability.

**Practical implications:** Staff believe they will derive some satisfaction with the introduction of ‘New Ways of Working’.

**Social implications:** Staff satisfaction to the implementation of ‘New Ways of Working’ will allow patients to access care with flexibility.

**Value of the Paper:** The study is promoting the introduction of ‘New Ways of Working’, to afford staff and patients more flexibility.

**Keywords:** Satisfaction, Staff, New Ways of Working, General Hospitals.

Introduction

The craving of out-patient clinics attendees of General Hospitals, nowadays, is for them to rather than their clinic appointments coinciding with their normal working hours, have an arrangement that will allow them ease of access to care at the time most convenient to them, going by the fact that most organizations, they work for, are becoming more complex and eating deeper into their attention and time. ‘New Ways of Working’ (NWW) has been found welcoming by many organizations the world over (Blok et al., 2012), but this concept is still alien to the public health sector in Nigeria, and it is its adoption that will make patients to satisfy this their craving for flexibility of access to health care.

NWW can be divided into the following components, bricks, bytes and behavior (Baane, Houtkamp, & Knotter, 2010; Kok, Koops, & Helms, 2014). According to Kok et al., (2014), bricks are the physical parts and are about all dimensions of the physical work environment, bytes refer to the technological component and concern with the use and application of information technology while behavior entails the personal component and it’s about the manager-employee relationship and the way of working of employees and their experiences while doing that work.

Human talent, according to Blok et al. (2012) and Gates (2005) is of greater importance in the implementation of NWW since it is responsible for the sharing of knowledge adaptation
and innovation. In the view of Bijl & Gray (2011), employees are important success factor, since they are essentially meant to handle information overload and need to make themselves easily accessible regardless of time and place.

The advantages of NWW to any organization practicing it, include cost-savings (Baane et al., 2010; Bass, Avolio, & Atwater, 1996; Bass, Avolio, Jung, & Berson, 2003), higher staff commitment (Bijl, 2009), better work-life balance (Slijkhuis, 2012) and higher productivity (Baane et al., 2010; Doherty, Andrey, & Johnson, 2000), greater motivation (Baane et al. 2010) and satisfaction (Stam2011), and this explain why many organizations are now adopting NWW, and may explain the strong growth that have followed this adoption by these organizations that have implemented a form of NWW (Blok et al., 2011). Organizations mainly change because they have a certain advantage in mind. However some untoward effects have been noticed in organizations implementing NWW and these include a decrease of social cohesion (Bijl, 2009).

It is the intention of this study to determine the level of satisfaction staff of General Hospitals in Nigeria will derive from the introduction and implementation of NWW, this becomes pertinent so as to establish the willingness of these staff to want to diligently implement NWW to assuage the dissatisfaction their patients are currently having concerning missed momentous clinic appointments which the present way of working is encouraging and which NWW will try to address.

Literature review

According to Newman et al. (2001), in any health care organization, patient satisfaction is an aftermath of employee satisfaction, so it is imperative of these organizations to view their employees as customers as well and strive to satisfy them by providing a conducive working ambience that augment the service capability of staff through empowered decision making, a measure which they opined will lead to more satisfied employees that would enthusiastically provide a higher level of care resulting in higher patient satisfaction, it is thus important to gauge staff satisfaction for the success of any measure that is aimed to satisfy patients.

2.1. New ways of working

‘New Ways of Working’, on the other hand, has a diverse definition and it is difficult to attribute any universally agreed definition to ‘New Ways of Working’ (Baane et al, 2010; Baruch, 2001; Volberda, Jansen, Tempelaar, & Heij, 2011). For example, Bijl (2009) defined NWW as a vision whereby recent developments in information technology act as a catalyst for a better design and management of knowledge work. This involves the reconstruction of the physical work place, the organizational structure and culture, the management style as well as a better design and management of knowledge worker and his manager. This definition has been established to encompass all other definitions as it includes the four most important focus areas (people, organisation, work environment and technology).

Bijl, (2007, 2009) and Blok et al, (2012), all identified four cornerstones of NWW to be:

1. The individual: this includes elements such as motivation and competence (development)
2. The organisation: this includes organisational structure, organisational culture and leadership style.
3. The work environment: this includes office space and design.
4. The technology: this includes ICT equipment and support.

Bijl (2007) also added that a relationship exists between these four cornerstones of NWW described above, and change or renewal is required in all these four cornerstones of NWW in order to achieve the NWW objective.

2.1.1. The individual and competency (Development)

Many different skills have been identified to be important for realizing NWW, and according to Stam (2011), the most important of these skills are: managing staff, organising
one's own work, commitment, networking, independence, decision-making skills, goal-orientation, communication, flexible behaviour and collaboration. And it is when these skills are well developed that NWW can be ensured (Pierick, 2009).

2.1.2. Organization

Bijl, (2009) and De Leede, and Kraijenbrink, (2014), stated that there are three elements that are closely knitted together within any organisation: vision/ambition, organisational structure and organisational culture. Vision and ambition gives the direction the organisation intends to tow. It is thus mandatory for the vision and the ambition of the organisation to accommodate NWW so as to ensure staff motivation and successful implementation of NWW. This may mean the re-organisation of the hospital structures, tending towards a network structure which allows collaborations between different levels of hospital workers with copious use of ICT for self-management, self-organisation, enterprise and exchange of information (Bijl, 2009, Kuipers, Amelsvoort, & Krame, 2010).

Organisational culture is about the correlation between how individuals within the organisation want to interact (Bijl, 2009) and how they actually communicate and collaborate with each other (Egmond van, 2010), and leadership plays an important role in this (Egmond van, 2010, Cameron, & Quinn, (2008) and Keuning, (2007). According to Bijl, (2007, 2009) NWW ensures the need of person-centred leadership, staff support, collaboration, and the realisation of connections with staff.

2.1.3. Technology

Introduction of ICT to NWW will help staff to be more productive, more creative and more flexible since this will help the implementation of NWW to be more smooth (Wensing, 2009), will enable collaboration and communication, (Haterd, 2010), and contribute to social cohesion (De Leede, & Kraijenbrink, 2014).

2.1.4. Work environment

A hybrid organisation may be formed with the partial implementation of NWW in which components of a traditional organisation are combined with those following NWW (Stam, 2011). NWW however, aims at working methods free of the constraints of time and place, this involves flexible work spaces within the organisation customized specifically to various sorts of activities (Bijl, 2007, 2009) and Egmond van, (2010). NWW makes the office to become a place where staff gladly physically meet each other there to work together (Bijl, 2009).

Theoretically, Stam (2011) demonstrated that NWW satisfies employees’ need, which Baane et al. (2010) suggested will lead to greater motivating effect on staff, but this was not the case in practical studies (Stoffers et al. 2015), this they said may be as a result of few researches into the full impact of NWW within the organisation but rather efforts have been on the nature of NWW and the relationships between its components.

3. Methodology

3.1. Study design, site and participants

A cross sectional study was conducted in a General Hospitals in Lagos, Nigeria. This hospital serves the major proportion of a section of the Lagos population because it offers enhanced clinical services. This sample size was calculated using Taro Yamane formula as follows:

\[ n = \frac{N}{1 + N(e)^2} \]

Where:

- \( n \) = Sample Size
- \( N \) = Elements of population in this study is 357
\[ e = \text{Error of sampling, in this study is 10 percent or 0.10 proportion.} \]

Therefore, substitution in the formula:

\[ n = \frac{357}{1 + 357 (0.10)^2} \]

\[ = 78.12 \]

Furthermore, owing to the diverse professional status of the respondents involved in this study, a stratified sampling method was adopted for this study by drawing separate random samples from amongst the different professional cadres found in this General Hospital: Doctors, Dentists, Pharmacists, Physiotherapists, Administrators, Accountants, Medical Records Officers, Nurses and Other Staff. This method was also adopted to draw random samples between the management and non-management staff.

3.2. Data collection method

This study used questionnaire for data collection since this is particularly appropriate for deductive research providing an easily accessible and controllable way for collecting and explaining data. The researcher sought for expressions of interest from all surveyed respondents using an introductory letter explaining the aim of the study and the anonymity of the answers, polite reminders were personally given by the respondent three days and repeated again a day to the deadline for the collection of the questionnaire. According to Fox, Crask, & Kim (1988), pre-notification and follow-ups increase the response rate. The list of concepts also accompanied the questions for clarification purpose.

The study instrument was designed by the researcher after a rigorous literature review (Memish et al, 2014, WHO, 2013, Gautret, 2013, and Al-Tawfiq & Memish, 2014). After an initial draft of the questionnaire was designed, it was validated in 2 steps. Firstly, the study instrument was discussed with the researcher’s supervisor and other senior academics versed in research work to give their expert opinion with respect to its simplicity, relativity and importance. Secondly, a pilot study was conducted by the selection of a small sample of health care professionals (n = 9) who gave their opinions on making the questionnaire simpler and shorter. Participants from all professions working within the hospital studied were selected for the pilot study. Amendments from the participants were considered and used in modifying the questionnaire, while ensuring its consistency with the published literature (Memish et al, 2014, WHO, 2013, Gautret, 2013, and Al-Tawfiq & Memish, 2014). After a thorough discussion, questionnaire was finalized by the researcher and subsequently distributed to the participants for their response. The data of the pilot study was not used for the final analysis. A copy of the questionnaire is included as Appendix 1 in this report.

The questionnaire consists of five sections labelled A-E. The first section of the questionnaire consists of the questions on demographic information: Gender, Age, Education level, Specialty/Department, and job functions. The rest of the sections contain questions on each of the four research questions for this study: The prevailing leadership style, the compatibility of present leadership style to the introduction of ‘New Ways of Working’, the effect of introduction of ‘New Ways of Working’ to staff satisfaction and the way of working preferred by the staff. Responses were evaluated through 7 point Likert scale of agreement, A score of 1 was given to strongly agree, 2 to agree, 3 to somewhat agree, 4 to neither agree nor disagree, 5 to somewhat disagree, 6 to disagree and 7 to strongly disagree. A mean score of 5 was considered as agreement to the statement of the research question while score of ≥5 was taken as disagreement to the statement of the research question.

Furthermore, a snapshot approach or cross-sectional study design was employed as the study was conducted at a specific moment in time. As such, there was no time available to conduct a longitudinal study. It was also desirable to know the state of affairs at this specific moment in order to be able to take action in the short term. The primary source of data
collection for this study was through the use of validated questionnaire and data was collected in May, 2016.

3.3. Reliability and validity of data collection instrument

3.3.1. Reliability

According to Dooley (2009, p. 76) reliability “refers to the degree to which observes scores are free from errors of measurement”. Reliability is measured by the consistency of the scores”. Cronbach’s alpha (Cronbach, 1951), was used to determine the homogeneity of the data collected. The internal reliability of the leadership style questionnaire was determined.

The contents of the questionnaire that was finally used, have reliability coefficient calculated using SPSS v.20 and the value of Cronbach’s alpha (Cronbach, 1951) was 0.78, and according to Nunnally (1978), Cronbach’s Alpha values higher than 0.7 is considered reliable.

3.3.2. Validity

Validated questionnaire was used in this study in order to increase reliability. According to Saunders, Lewis, Thornhill, Booij, & Verckens, (2011), a validated questionnaire incorporates validity which reflect whether the research is actually measuring what it is supposed to measure, this according to them is the extent to which the collection of data, the techniques used and the analysis ensured for inter-dependent findings.

The content validity of the instrument was carried out by the project supervisor and other senior academics.

3.4. Data analysis method

The data generated from this study was analysed using SPSS version 20. The analysis was done in three parts: 1). univariate analysis, 2). bivariate analysis, and 3). multivariate analysis. Mean, median, mode and standard deviation were employed for the univariate analysis, the bivariate analysis for this study was used to establish whether NWW can lead to higher productivity and organisational commitment. Bivariate relationships between 7-item likert scales are analysed using Spearman’s correlation coefficient r was used to measure the correlation, because the measurement scale is ranked (Bryman & Bell, 2011).

Multivariate analysis in this study tested whether distinct variables of leadership lead to a higher staff satisfaction, and also tested whether the introduction of NWW will make the moderator leadership has an effect on staff satisfaction (Dooley, 2009).

Results

Table 1: Gender of the Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>30.9</td>
</tr>
<tr>
<td>Female</td>
<td>56</td>
<td>69.1</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 above shows that 69.1% of the respondents were female while 30.9% were male. This indicates that both male and female sexes are represented in the study.

Table 2: Age distribution of the Respondents

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 &amp; Below</td>
<td>1</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Table 2 reveals that 80.4% of the respondents are between 26 and 50 years age range, out of which 60.3% are within the age group 41 and 50 years. Those below 25 years and those above 56 years of age were 1.2% respectively of the respondents. The median age is 41.4 years, the mode is 41.4 years, and the mean is 40.6 years.

**Table 3: Education Distribution of Respondents**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary School</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>OND/NCE</td>
<td>8</td>
<td>9.9</td>
</tr>
<tr>
<td>School of Nursing Certificate</td>
<td>17</td>
<td>21.0</td>
</tr>
<tr>
<td>Bachelor/HND</td>
<td>42</td>
<td>51.9</td>
</tr>
<tr>
<td>Post Graduate Degree</td>
<td>11</td>
<td>13.6</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 3 indicates that 65.5% of the respondents have more than a bachelor degree, with 20.8% of this group of respondents even having a post-graduate degree, 9.9% had OND/NCE, 21.0% had a School of Nursing certificate, and only 2.5% had a Secondary School certificate.

**Table 4: Distribution of Respondents by Profession**

<table>
<thead>
<tr>
<th>Specialty/Department</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>29</td>
<td>35.8</td>
</tr>
<tr>
<td>Medical</td>
<td>11</td>
<td>13.6</td>
</tr>
<tr>
<td>Dental</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>11</td>
<td>13.6</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Health Information Management</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td>Laboratory</td>
<td>6</td>
<td>7.4</td>
</tr>
<tr>
<td>Account</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td>Administration</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Medical Social Worker</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table 4 shows that the core staff of the hospital, supposedly including the Nurses, Doctors, Dentists, Pharmacists, Physiotherapists and Laboratory workers, as seen in the table, constituted 76.6% of the respondents, an indication that all the core hospital staff needed for the purpose of this research are well represented.

<table>
<thead>
<tr>
<th>Job Function</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managerial</td>
<td>21</td>
<td>25.9</td>
</tr>
<tr>
<td>Non-Managerial</td>
<td>60</td>
<td>74.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 5 shows that the non-managerial staff among the respondents as revealed in the Table above constituted 74.1% of the respondents while 25.9% were managerial staff which include Head of Departments, Head of subunits and members of Hospital Management Committee, a confirmation of a good representation of all cadres of staff in the sample.

Table 6: “New Ways of Working” on staff satisfaction

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>SA (%)</th>
<th>A (%)</th>
<th>SMA (%)</th>
<th>N (%)</th>
<th>SMD (%)</th>
<th>D (%)</th>
<th>SD (%)</th>
<th>Mean</th>
<th>St D</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will be satisfied on my job if I am given the free hand to make impactful decisions on my work schedule.</td>
<td>31 (25.9)</td>
<td>39 (48.2)</td>
<td>13 (16.1)</td>
<td>4 (4.9)</td>
<td>1 (1.2)</td>
<td>2 (2.5)</td>
<td>1 (1.2)</td>
<td>2.20</td>
<td>1.18</td>
</tr>
<tr>
<td>I will be satisfied if I am encouraged to attend to my patients using IT media in addition to physical attention.</td>
<td>5 (6.2)</td>
<td>25 (30.9)</td>
<td>13 (16.1)</td>
<td>7 (8.6)</td>
<td>5 (6.2)</td>
<td>18 (22.2)</td>
<td>8 (9.9)</td>
<td>3.84</td>
<td>1.95</td>
</tr>
<tr>
<td>I will be satisfied if I am given more independence in doing my work.</td>
<td>14 (17.3)</td>
<td>39 (48.2)</td>
<td>20 (24.7)</td>
<td>3 (1.2)</td>
<td>2 (2.5)</td>
<td>1 (1.2)</td>
<td>0 (0)</td>
<td>2.38</td>
<td>1.16</td>
</tr>
<tr>
<td>I will be satisfied if I am allowed to do some of my official duties at home.</td>
<td>3 (3.7)</td>
<td>9 (11.1)</td>
<td>12 (14.8)</td>
<td>10 (12.4)</td>
<td>6 (7.4)</td>
<td>30 (37.0)</td>
<td>11 (13.6)</td>
<td>2.28</td>
<td>1.27</td>
</tr>
<tr>
<td>I will be satisfied if I am given the freedom to determine the time of starting and closing each day work rather than sticking to the 8am to 4pm routine</td>
<td>6 (7.4)</td>
<td>8 (9.9)</td>
<td>8 (9.9)</td>
<td>8 (9.9)</td>
<td>5 (6.2)</td>
<td>31 (38.3)</td>
<td>15 (18.5)</td>
<td>4.74</td>
<td>1.78</td>
</tr>
<tr>
<td>I will be satisfied if I am allowed to do my private business</td>
<td>3 (3.7)</td>
<td>8 (9.9)</td>
<td>12 (14.8)</td>
<td>6 (7.4)</td>
<td>9 (11.1)</td>
<td>24 (29.6)</td>
<td>19 (23.5)</td>
<td>4.86</td>
<td>1.92</td>
</tr>
</tbody>
</table>
alongside my work as a hospital staff.

<table>
<thead>
<tr>
<th>I will be satisfied on my job if the hospital provides a means of accessing relevant information about my work within the hospital</th>
<th>41 (50.6)</th>
<th>33 (40.7)</th>
<th>5 (6.2)</th>
<th>0 (0)</th>
<th>0 (0)</th>
<th>1 (1.2)</th>
<th>1 (1.2)</th>
<th>4.95</th>
<th>1.85</th>
</tr>
</thead>
</table>

Average 3.52 1.54

*SA= Strongly Agree, A= Agree. SMA= Somewhat Agree, N= Neutral, SMD= Somewhat Disagree, D= Disagree, SD= Strongly Disagree

Table 6 shows that the statement the respondents they will derive most satisfaction on their job if they are given the free hand to make impactful decisions on their work schedule, with a mean of 2.20 and a standard deviation of 1.18, which is not too large indicating that the study instrument is a good measure of the variable.

Also the mean of Table 6 is 3.52 which showed that on the average the respondents marginally agreed that they will have more job satisfaction if ‘New Ways of Working’ is introduced into their hospital.

**Discussion**

There is a preponderance of female among the respondents (69.1%), this is majorly because respondents in the nursing profession are all females and constituted a major part of the respondents (35.8%), but both sexes are well represented. Majority of the respondents (80.4%) are between 26 and 50 years age range, the active working age group, which means they are abreast of the ‘going-ons’ in the organization, and since they are the pleasure seeking group, it then means they will be able to discern easily what gives them satisfaction and overall, the data shows that all working age groups are represented. A significant chunk of the respondents 65.5% have more than a bachelor degree, with 20.8% of these group of respondents even having a post-graduate degree, which means their responses are not hampered by lack of education and understanding of the hospital system.

The core staff of the hospital, supposedly including the Nurses, Doctors, Dentists, Pharmacists, Physiotherapists and Laboratory workers, as seen in the table, constituted 76.6% of the respondents, an indication that all the core hospital staff needed for the purpose of this research are well represented. The non-managerial staff among the respondents constituted 74.1% of the respondents while 25.9% were managerial staff which include Head of Departments, Head of subunits and members of Hospital Management Committee, a confirmation of a good representation of all cadres of staff in the sample.

This study reveals that on the average, the respondents perceive that they will derive more satisfaction by imbibing a new way of working different from what they are actually used to. This finding is in consonance with the assertion by Stam (2011) that NWW satisfies employees’ need, and lead to greater motivating effect on staff (Baane et al. 2010) but this was disputed by Stoffers et al., (2015) that this was not usually the case in many practical studies they undertook. Though, undisputedly, Bijl (2007, 2009), Blok et al., (2012) and Stoffers et al. (2015) concurred that rather than NWW satisfying employees it is only some components of NWW like the work environment and technology pillars that improve staff satisfaction. However, Beech (2002) stated that improving leadership within the organization should enable a more effective implementation and ownership of changes and improve job satisfaction and career advancement, and so it has to be discerned and practicalised in paripassu.

However, out of all the components of NWW that the respondents in this study responded to, they tend to believe they would have more satisfaction when they are allowed the freedom
to make impactful decisions on their work schedules. This finding is line with the assertion of Berlowitz et al, 2003, who affirmed that organizations that focus on empowering nurses can help in them taking more active roles in daily care decisions, which is believed to enhance employee satisfaction. Also, Relf (1995) established that when employees are more active in decision making, they feel more engaged which leads to higher satisfaction and lower turnover rates.

**Conclusion**

This study, thus, make the following conclusion:

On the average the respondents believe they will derive more satisfaction on the introduction of new ways of working in General Hospitals in Nigeria. They however believed they will derive the least satisfaction when the hospital make provision for them with means of accessing information relevant to their work within the hospital (4.95 ± 1.85). However, they were able to establish that when they are given a chance to make impactful decisions on their work schedules they will derive the highest level of satisfaction (2.20 ± 1.18).

**Recommendations**

New Ways of Working should be sold more solidly to staff, since they have shown that they will surely derive some satisfaction with its introduction and implementation, and also its benefits should be inculcated into the psyche of policy makers, since expectedly, it will also be satisfying to patients as well because of the flexibility it will afford them to receive health care from these hospitals.

**Suggestions for further studies**

More respondents from more General Hospitals in Nigeria should be involved in future studies so as to further establish the satisfaction that this concept of ‘New Ways of Working’ will bring to staff of these hospitals and in extension to their patients.

**References**


Assessment of Uptake of Free Maternity Services among Women Visiting Kisumu East District Hospital, Kisumu County, Kenya

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Abstract

**Introduction:** Maternity services are an essential part in any and all communities. This includes care from a traditional birth attendants or a trained HW. This is aimed at improving the maternal health and reducing child mortality which in the long run will lead to development.

**Problem statement:** There has been a problem of overcrowding and poor quality of services already in public hospitals before the introduction of free maternity. This new change saw a rise in the number of women delivering in the hospital increase drastically causing a strain in the already tight situation. Many women hence prefer to deliver delivering in the hands of traditional birth attendants and only coming to the hospital if and when complications occur. This has led to the high mortality and maternal morbidity rates.

**Justification:** Maternity is a crucial part in any and all societies in ensures continuity from generation to generation. It is important to ensure that all women of child bearing age can easily access the services from a skilled birth attendant.

**Objectives:** Broad: To assess the Uptake of free maternity services among women visiting Kisumu East District Hospital. Kisumu East District Hospital was selected for the research due to its convenience and proximity to the researcher. Descriptive study design was chosen that seeks to describe the pattern of a phenomena by person, place and time. Convenience sampling was used by drawing a representative data. People were selected because of the ease of their volunteering and units because of their availability of easy access.

**Data collection:** Data was collected by administration of questionnaires where key informants were interviewed.

**Analysis:** SPSS version 20.0 used for data analysis.

**Findings:** Ninety four percent 94% of the respondents were aware of the free maternity services 93% of the women visited ANC clinic during their last pregnancy while only 7 % did not. A total of 76% of the respondents delivered at home while the rest 24% delivered in hospital. The most common reason for delivering at home among the women was accessibility to a health facility at 41%.

**Conclusion:** Most mothers were aware of the free maternity services available in Kenya hence attended attend ante-natal and post-natal clinics. Although they are aware of the services available, many of the mothers do not deliver in the hospital due to the low standards of the services caused by overcrowding, low stuffing and insufficient supply of medication.

**Recommendation:** Undertake a comprehensive maternal health education campaign which focuses on key causes of delay of treatment and seeks to promote gender equality in health decision-making to allocate more funds to the free maternity services implementation to improve its implementation and improve the quality of services provided in the health facilities.

**Keywords:** Free maternity services, maternal morbidity and mortality rates, Antenatal care and maternal deaths

**Introduction**

Kenya has long suffered from high maternal morbidity and mortality rates. The most recent estimates set the maternal mortality rate at 488 deaths per 100,000 live births, well above the...
MDG target of 147 per 100,000 by 2015. The problem is driven, at least in part, by lack of access to quality maternal health services, including ante-natal, delivery, and post-natal services. Reproductive health is widely recognized to include family planning, Antenatal, delivery, and postnatal health services. The Kenyan Constitution of 2010 further provides that a person has the right to emergency treatment (Article 43(2), the right to inherent dignity and the right to have that dignity respected and protected (Article 28), and the right to access information (Article 35). The Kenya National Patients ‘Rights Charter (2013) outlines the right to access health care, the right to receive emergency treatment in any health facility irrespective of ability to pay, the right to the highest attainable quality of health care products and services, the right to be treated with respect and dignity, the right to information, and the right to complain, among others. This move by President Uhuru Kenyatta will improve maternal health, as most mothers will now deliver under skilled care, said Dr. Francis Kimani, the Director of Medical Services (HERAF, 2013). The decision to waiver maternity fees was also aimed at reducing the Kenya’s high maternal death rate.

Problem statement

There has been overcrowding and poor quality of services already in public hospitals before the introduction of free maternity. This new change saw a rise in the number of women delivering in the hospital increase drastically causing a strain in the already tight situation. This has caused a burden to the service providers where seven nurses are allocated to 4000 residents which half the recommended 14 nurses per 4000residents is leading to the decrease in the quality of services provided. Many women hence prefer to deliver in the hands of traditional birth attendants and only coming to the hospital if and when complications occur. This has led to the high mortality and maternal morbidity rates of 488 deaths per 100,000 live births which is well above MDG target of 147 deaths per 100,000 by 2015 (Bourbonnais, 2013).

Justification

Maternity is a crucial part in any and all societies and ensures continuity from generation to generation. It is hence important to ensure that all women of child bearing age can easily access the services from a skilled birth attendant. The framework for free maternal health services is provided for under several local, regional, and international mandates. Article 43(1) (a) of the Constitution of Kenya 2010 states that: Every person has the right to the highest attainable standard of health, which includes the right to health care services, including reproductive health care. About 78% were home deliveries (last childbirth) even after visiting the ANC (Antenatal care).

Research questions and objectives

Research questions included was ‘What is the uptake of free maternity services among women visiting Kisumu East District Hospital’ while the broad objective was to assessment of the uptake of the free maternity services among women visiting Kisumu East District Hospital, with Specific objectives, to assess the knowledge on free maternity services, to establish the level of uptake of free maternity services among women visiting postnatal clinic in Kisumu East District Hospital and to determine the challenges faced by the women when accessing the free maternity services.

Literature review

Knowledge of the free maternity

If pregnant women have the knowledge on kinds of services offered by public hospital the value of implementing these services will be realized while if people do not utilize the service then it doesn’t make any economic sense. Also the condition of facilities ought to be at its best to attract more patients to use the services while at the same time all deliveries should be
with the assistance from trained healthcare worker who is capable of identifying the signs of complication and act appropriately (Griffiths and Stephenson 2001).

Many women have the correct knowledge regarding minimum numbers of antenatal visits to be done by a pregnant woman (WHO guideline). Nearly two-fifth participants knew schedule of antenatal care (ANC) visits. Almost 60% had done \( \geq 4 \) ANC visits during last pregnancy. Majority visited Sub Health Post/Health Post/Primary Health Care Centre for ANC Checkup. Gyawali, 2013 explains that while up to 92 percent of expectant mothers in Kenya attend antenatal care, more than half of them do not deliver in hospitals. In some regions such as Kenya’s Nyanza and Western provinces, about 75 percent of women do not deliver in hospital, (Gyawali, 2013).

**Level of uptake of free maternity services among women visiting postnatal clinic in kisumu east district hospital**

Despite China’s rapid economic growth, maternal and infant health in rural areas remains a policy concern. There are a large number of new programs in the area of public health: folic acid for pregnant women; programs to encourage delivery in hospitals; immunization programs for new-borns; and initiatives to increase health awareness and literacy on issues ranging from prenatal to postnatal and postpartum. Despite these initiatives, there is evidence that maternal and child health care service utilization remains low.

Giving birth with the help of a trained professional is critical in reducing maternal mortality, which can simply be defined as the death of a woman while pregnant or within 42 days of termination, from a cause related to the pregnancy or provoked by the pregnancy or its management. It is shocking to know that more than half of Kenyan women still give birth at home without the help of qualified attendants. According to the Kenya Demographic and Health Survey 2008/2009, 56 per cent of women give birth at home. The survey further says that 63 per cent of births in rural areas are delivered at home, But myths and misconceptions, as well as the lure of traditional birth attendants’ supposed knowledge, are not the only reasons why expectant mothers shun hospital delivery.

**Challenges faced by the women when accessing the free maternity services**

Unfortunately, too often, pregnant women seeking maternity care receive varying degrees of ill treatment: from relatively subtle disrespect of their autonomy and dignity to outright abuse – physical assault, verbal insults, discrimination, abandonment, or detention in facilities for failure to pay. Evidence is now emerging that this fear of being badly treated and abused in health facilities is holding women back from seeking help. It is proving to be as big a deterrent as cost of care and transport. (Rowdon, 2014).

During the *Madaraka* day celebrations on June 1, 2013, President Uhuru Kenyatta announced the waiver of maternity charges. The news was received with delight by majority of Kenyans, particularly women. However, some were not too quick to celebrate as they sought to understand the reality of how that would work without compromising the quality of the services offered in these health institutions. In keeping with the promises made by the *Jubilee Alliance* during the election campaigns, the president said the scrapping of the fees would help all expectant mothers’ access maternal care and would also help reduce maternal deaths.

The move by President Uhuru Kenyatta will improve maternal health, as most mothers will now deliver under skilled care, said Dr. Francis Kimani, the Director of Medical Services. This decision to waiver maternity fees was also aimed at reducing the Kenya’s high maternal death rate. Although many mothers are taking advantage of the new free delivery services, some women still prefer the services of traditional birth attendants for various reasons. For some, it’s because they live a long distance from the nearest health facility and because they do not trust hospitals. Antenatal consultations and facility-based deliveries are critical in improving the health of women and children. However, less than half of all pregnant women in Kenya receive the WHO-recommended minimum of four antenatal consultations, and only
43 percent of births occur in health facilities. Some of the reasons given by women for giving birth at home, particularly in the marginalised areas such as the North Eastern region of Kenya, seem valid. They argue that the health facilities are too far from where they live making it almost impossible to access hospital facilities (Bournnais, 2013).

PGH statistics show that only five percent of the population in the north-eastern region have access to health facilities for delivery. The remaining 95 percent rely on traditional birth as their only hope in ensuring safe delivery for both mother and child.

Physical access to health facilities through distance and/or lack of transport, and economic considerations are important barriers for women to delivering in a health facility in Kenya. Some women do not perceive a need to deliver in a health facility and may value health facility delivery less with subsequent deliveries. Access to appropriate transport for mothers in labour and improving the experiences and outcomes for mothers using health facilities at childbirth augmented by health education may increase uptake of health facility delivery in Kenya (Kitui, 2013). Women in public hospitals are either neglected by nurses or are attended to by medical trainees.

Health facilities are generally understaffed and in some regions, particularly in rural areas, you will find three or four nurses attending to children and the general public while at the same time delivering babies. Health experts have faulted the government’s programme of free maternity services in public health facilities citing inadequate resources and personnel. It is quite evident from increase in the number of pregnant women seeking medical services in the public facilities that the public health facilities feel the burden of catering for an ever increasing number of patients i.e. the number of pregnant women has skyrocketed, leaving the nurses and other health workers lamenting about their workload. Further, it is noted that the pay, numbers and allowances of health workers has remained constant, resulting in poor motivation and consequently poor services delivery. While the maternity fee waiver is a progressive step, more needs to be done to care for Kenya’s expectant mothers. Health facilities require more staff, and to be provided with the necessary drugs and equipment to provide maternity services (Ingati, 2013).

There are many more mothers who need help to deliver since the maternity waiver was introduced but the number of staff remains the same. Sometimes it becomes impossible to supervise the delivery of all mothers effectively hence a lot needs to be done to realise this all-important agenda of reducing maternal mortality in the country (Gathigah, 2015). Despite its commitment to maternal health care, Kenya continues to make slow progression with this regard. With a maternal mortality rate of 488 deaths per 100,000 live births, the country is off track in achieving the UN Millennium Development Goal numbers four and five by 2015. Kenya had committed to reduce these deaths to 147 per 100,000 live births by 2015.

Methodology

Study area

This research was carried out Kisumu East District Hospital which is a level Kisumu is a port city in Kisumu county, Kenya at 1,131 m (3,711 ft.), with a population of 409,928 (2009 census). It is the third largest city in Kenya, the principal city of western Kenya, the immediate former capital of Nyanza Province and the headquarters of County It is the largest city in Nyanza region. Kisumu East District Hospital is one of the hospitals in Kisumu County and attracts people from all over the region.

Study design, target and sample population

This research was a descriptive study and the target population were women of child bearing age accessing postnatal clinic services. The sample population were the women of childbearing age with the last child below the age of three years of age accessing postnatal clinic services. An average of 854 mothers that visit the postnatal clinic monthly.
Sample size determination

Target population, N= 854 persons to represent the entire population of women accessing post-natal services in Kisumu East District Hospital Using Fisher’s Formula. (Fisher et al, 1998).

The sample size was calculated using Fischer’s method of epidemiological sample size determination where 128 was obtained.

Kisumu East District Hospital was purposefully chosen due to its proximity to us. The target population were women of child bearing age. They were conveniently chosen. Women with their last child below the age of three years of age were chosen.

Data collection

The tool had a set of questions which were administered by the interviewer to collect quantitative. The quantitative data that were collected using interviewers’ schedule include; the age of the respondents, the knowledge of the respondents on free maternity services, the number of times the respondent have attended ANC, the number of hospital and home deliveries among others. To ensure uniformity in its administration and data collected, the interviewers’ schedule was standardized.

Before administration of the tool, consent was sought from the respondent and confidentiality guaranteed.

Administration of the tool included the questions read to the respondent, clarification and interpretation made where necessary to the respondent and response was recorded quantitatively or qualitatively.

Key Informant Interview included seeking Verbal consent first, guarantying confidentiality to the key informant, addressed questions under various themes, recording the responses and picking the main points only.

Data analysis procedures

Data was analysed by the use of SPSS version 20.0. Frequencies and percentages were used to attain descriptive statistics and presented inform of tables, charts and graphs.

Inclusive criteria and ethical clearance

Inclusion criteria included women of reproductive age and Mothers with last child below the age 3 years. Permission was sought from the ethics department in the County as well as from the medical superintendent of the Kisumu East District Hospital.

Results and findings

Demographic data

A total of 54% of the respondents were below the age of 20 years with a percentage of 7% below the age of 15 years. Many of the respondents 82% were married while the minimum 3% were widowed. 86.9% of the respondents had attained primary education only while a minimum of 5.5% had attained tertiary education. 47% of those who were married were between the ages of 21-30 years while the lowest was between the ages of 16-20 at 4.5%.

Ninety four percent (94%) of the respondents were aware of the free maternity services available while 6% were not aware. Ninety three percent (93%) of the women visited ANC clinic during their last pregnancy while only 7 % did not.

Forty six percent (46%) of the women visited the ANC more than 4times which is the recommendation while the lowest number at 7% never visited the ANC.

A total of 78% of the respondents who visited the antenatal clinic during their last pregnancy delivered at home while the rest 22% delivered in hospital.
Reasons for Home Delivery

The most common reason for delivering at home among the women was accessibility to a health facility at 41% while the least was cultural beliefs at 25%.

Challenges faced when accessing the free maternity services.

Forty seven percent (47.6%) of the respondents stated that they had to purchase their medication while 8.9% said that they were treated harshly by the service providers. 21.9% of the respondents waited in line for long before they could be attended to and twenty one percent (21.6%) of the respondents were forced to buy medical supplies for example cotton swab, methylated spirit, syringes among others.

Discussions, conclusion and recommendation

Knowledge of the women on the free maternity services

A total of 54% of the respondents were below the age of 20 years, while 87% of the respondents had attained primary education only while a minimum of 5% had attained tertiary education. The low level of education and high numbers of early marriages may be directly linked to the high numbers of early pregnancies. Majority of the respondents were aware of the free maternity services. This is due to the active campaign and advertisement that has been going on in the country.

Uptake of free maternity services among women visiting postnatal clinic in Kisumu East District Hospital.

The low levels of hospital deliveries may be directly linked to the low quality of services, and inaccessibility of the facilities. This has hence seen a total of 76% of the respondents delivered at home while only 24% delivered in hospital.

Although 93% of the women visited ANC clinic during their last pregnancy only 7% did not. Out of the 93% that visited the ANC, only 22% of them delivered in the hospital. This is in line with a statement by (Bournnais, 2013) who stated that 75 % of women in Nyanza do not deliver in hospitals. All the respondents were able to access the maternity services that were being provided.
Challenges faced by women when accessing the services

The low supply of medication forced mothers to buy for them which in the long run made the service expensive. Inadequate supply of medication made the services expensive which is contrary to the free maternity goals. This hence lead to the decrease in the number of hospital deliveries. Over the years these low levels of hospital deliveries may also be directly linked to the low quality of services, and inaccessibility of the facilities. By the expectant mothers this is in concurrences with an article.

The high bed capacity and the low staffing lead to low quality of the service provided. This hence saw mothers opting for other alternatives of hospital delivery.

Inadequate supply of medication made the services expensive which is contrary to the free maternity goals.

The low bed capacity and the low staffing lead to low quality of the service provided. This hence saw mothers opting for other alternatives of hospital delivery which is hence in concurrent with a statement by (Ingati, 2013) "Health facilities are generally understaffed and in some regions, you will find three or four nurses attending to children and the general public while at the same time delivering babies".

Conclusion

The study has shown that most mothers are aware of the free maternity services available in Kenya. This has hence seen many of the women taking advantage of these services despite the quality of the services available. Most of the mothers hence attend ante-natal and post-natal clinics. Many of the women do not deliver in hospitals even after visiting ANC. This is mainly as a result of the fact that they end up purchasing medication as they seek the services which makes the maternity services expensive. Although they are aware of the services available, many of the mothers do not deliver in the hospital as expected during the free maternity introduction. This is according to the results acquired during this research. This is as a result of the low standards of the services due to overcrowding, low staffing, and insufficient supply of medication. Improvement of the free maternity services has to be handled from different angles; various factors are dependent on each other as shown in the diagram below.

Recommendation

To the county government

- The county government should conduct a mass mobilisation and education to inform the women on the importance of hospital delivery.
- Encouraging and promoting girl child education to reduce the number of early marriages and early pregnancies.

To the national government

- Undertake a comprehensive maternal health education campaign which focuses on key causes of delay of treatment and seeks to promote gender equality in health decision-making.
- To allocate more funds to the free maternity services implementation to improve its implementation and improve the quality of services provided in the health facilities.

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Public Awareness of the National Health Insurance Scheme (NHIS) among Patients accessing Healthcare in Supreme Faith Hospital, Ado-Ekiti, Nigeria

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Abstract

Objective - To determine the public awareness of the National Health Insurance Scheme (NHIS) among patients accessing health care in Supreme Faith Hospital, Ado-Ekiti, Nigeria.

Study design and Setting - A cross-sectional study design that made use of quantitative survey method involving data collection and analysis.

Participants - 120 voluntary adults who access health care services at Supreme Faith Hospital, Ado-Ekiti, Nigeria.

Method - A semi-structured questionnaire was administered to participants who also consented to the survey. A cross-sectional study was deemed fit for this research because it enables any desired data to be collected at one point in time.

Results - The study revealed that a greater number of respondents i.e. 82 (68.3%) were aware of the existence of the National Health Insurance Scheme (NHIS) but only 38 (31.7%) were enrollees in a hospital setting which is accredited to providing health care services under NHIS. There were more females (64.2%) than males (35.8%) among the respondents. A greater number of respondents were educated; Secondary (36.7%) and Tertiary education (48.3%), while Primary education (8.0%) and none/others (10.0%) were much lesser. There was weak statistical significant finding between education and awareness of NHIS (p=0.045).

Conclusions - The awareness of NHIS was high among patients who were accessing health care services in an accredited facility in Nigeria. However, the number of enrollees among them was much lesser than expected. It is recommended that effort should be geared towards improving the rate of enrolment process, especially in the face of the heavy burden of out-of-pocket expenditure in health care.

Keywords: Enrolee, Healthcare, Health insurance, Nigeria, Out-of-pocket payment, Services.

Introduction and background

The history of health insurance dates back to 1883 in Germany when Emperor Otto Von Bismarck enacted the mandatory legislation on the ‘sickness funds’ for working Germans. Since then different types of health insurance have continued to evolve among various countries of the world.

Payment for health care services can take different forms. For example, out-of-pocket payment, Insurance (which can be made by private or government organisation), and free health service scheme which is mainly carried out by the government or religious bodies. In developing world, out-of-pocket payment for health care service takes the highest degree (Spaan, Mathijssen, Tromp, et al, 2012). This discourages health care accessibility and utilisation particularly among financially less privileged group in the society. The World Health Organisation (WHO) considers health insurance scheme a worthy means for making universal health care coverage a reality (WHO, 2010). Nigeria has over 80 percent of her population who rely heavily on out-of-pocket expenditure for individuals and family members.

Corporate organisations pay for their work force through arrangement with private hospitals on retainer ship basis, although recently some of them are gradually embracing one form of Health insurance scheme or the other. Spaan, Mathijssen, Tromp, et al, (2012)
emphasise that the heavy burden and challenges posed to individuals by out-of-pocket payment for health care services have discouraged accessibility to health care facilities in Sub-Saharan Africa. Health insurance scheme which serves as a better option is yet to gain solid ground in most developing countries.

In an attempt to address the burden of out-of-pocket payment for health care services, the Nigerian government under the leadership of former President Olusegun Obasanjo, launched the National Health Insurance Scheme (NHIS) on 6th June 2005. The commencement of services to enrollees, however, started in September 2005 (NHIS, 2014). The initial enrollees under the scheme were majorly from the formal sector which comprises of the public sector, the Armed forces and Allied services. The past two years has witnessed additional registration of organised private sector, students of tertiary institutions and voluntary contributors.

As at 2013, NHIS has only achieved registration of about 5 million enrollees in a country with an estimated population of over 160 million people since its inception. Has the scheme created sufficient public awareness to encourage individuals to come on board or are there other impediments delaying increasing surge in the number of enrollees in a country with serious burden of out-of-pocket expenditure in health care industry.

The objective of the study is to determine the public awareness of the National Health Insurance Scheme (NHIS) among patients accessing health care in Supreme Faith Hospital, Ado-Ekiti, Nigeria.

General considerations

History about NHIS

The idea to build a national health insurance that would greatly address of out-of-pocket payment for health care services was muttered in 1962 after Nigerian independence from her colonial master. Various governments that succeeded the then government attempted taking steps into actualising the dream of a national health insurance scheme but none of them did any palpable work to realise the vision.

To worsen the situation, the country was forced into military detector ship that lasted for over 3 decades. None of the military Head of States took giant stride into actualising a health insurance for a teeming Nigeria population. It was not until the democratically elected government under the leadership of former president Olusegun Obasanjo launched the very laudable National Health Insurance Scheme (NHIS) on 6th June, 2005.

The scheme was established under Acts 35 of 1999 by the federal government of Nigeria with the singular aim of providing easy access to health care for all Nigerians (irrespective of age) at an affordable cost through various prepayment systems (NHIS, 2004). The journey from 2005 till date to achieve a wider coverage of the population and give succour to Nigerian citizens through NHIS has rather been a daunting task.

Benefit packages

The provision of health care services by the National Health Insurance Scheme (NHIS) is through the pooling of fund from the participating governmental and non-governmental bodies. This is different from the situation witnessed in the National Health System (NHS) in Britain where the government uses tax-payers money to operate the system. The contributions made into NHIS cover different dimensions of health care benefits for the enrollees including the employee, a spouse and four biological children who are under 18 years of age (NHIS, 2014). However, an additional payment by the principal beneficiary can be made under a defined payment system for more dependants or his biological children who are above 18 years.

The benefit packages for NHIS enrollees include:
- out-patient care for enrollees
- Approved drugs as prescribed by the physician, pharmaceutical care and laboratory / diagnostic test.
- Maternity care which extends to four live births.
Preventive care like immunization (under EPI), health education, antenatal care, post-natal care, and family planning.
Consultation under secondary care with specialists.
Hospital admission not exceeding a cumulative 15 days per year.
Ophthalmological examinations and care but without the provision of spectacles and contact lenses for enrollees.
Preventive dental care and pain relief.
A range of prosthesis which is limited to artificial limbs made in Nigeria (NHIS, 2014).

Other extended benefits to the enrollees under the NHIS include referral from one hospital to another depending on the nature of severity of the health problem. For example, a referral of patient from a primary to a secondary health care facility, or a secondary to a tertiary health care institution. NHIS utilises strategic health communication in its rural community based programmes to facilitate social change.

There are obvious exclusions that are well defined by NHIS in her service to enrollees. They include (but not limited to) management of infertility, organ transplant, oversee treatment of chronic health conditions, etc.

Operation of NHIS under the current formal sector social health insurance programme

The formal sector social Health Insurance programme under NHIS is a social health security system which is designed to take care of employees’ health care need from funds created by pooling the various contributions of employees and employers in the formal sector (NHIS, 2014). It is worth noting that the formal sector consists of the public sector, organised private sector, Armed forces, police and allied service, students of tertiary institution in Nigeria and voluntary contributors.

The contributions made into the common fund are earning-related i.e. contributions are made depending on the basic salary of the enrollee. A total of 15% of the employees’ basic salary is contributed into the common pool. The employer pays 10% while the employee pays 5%. An additional payment is made by an enrollee when accessing health care services. This time, only 10% of the total cost of drugs dispensed (excluding consultation) is paid to the health care facility.

The market structure seen in NHIS does not follow a normal market pattern in structure, conduct and performance (SCP) as witnessed in other industries. However there exists interplay between monopolistic competition and oligopoly. Moreover, health care market presents difficulty in measuring its product and cost (TAU, 2014).

NHIS has the characteristics of a matrix organisation. It is a horizontally based organisation which is programme focused rather than position-oriented. (TAU, 2014). There are different tentacles used by NHIS to provide health care services to enrollees and also judiciously manage the available resources. The Health Maintenance Organisation (HMO) receives money from NHIS and disburses it, in form of capitation payment for primary care, to Health Care Providers (HCP). Additionally, the HMO pays fee-for-service to HCP for secondary and tertiary health care services. There is a reciprocal accountability on the part of the HPC to give regular information to the HMO about enrollees’ usage of health care facilities. The NHIS oversees the activities of the HMO and HCP, and regularly monitors patient satisfaction with health care services.

Health insurance programme in sub-saharan africa

The burden of ill health especially from communicable diseases and emerging and re-emerging diseases in the face of heavy burden of out-of-pocket payment modality in the sub-Saharan Africa, there was a singular need to establish health insurance scheme in countries in the region. Some countries took steps, some years ago to introduce health insurance scheme into their national life. However, the journey towards its full realisation in those countries was
challenging and daunting. Problems of poverty, wars and consequential displacement of individuals and communities made it difficult to organise a vibrant health insurance scheme. Liberia, for example, is still recovering from long years of civil war. There is no well organised and affordable health insurance scheme in place. The available ones are deeply into for-profit business (Pacific Prime, 2014).

Ghana smoothly kick-started her health insurance scheme in 2004 and it has presently recorded a success of about 60 percent national coverage (Ghana-NHIS, 2010). South Africa has both private and public health care systems. The vast majority of the population access the public health care system, while the wealthiest 20 percent of the population access their health care need in the private system. The South African public health care system is chronically understaffed and underfunded. There is no national health insurance scheme in place. However, the present government is taking steps towards actualising a national health insurance to cater for the health need, especially, of the low and middle class. Meanwhile, the Nigerian health insurance scheme has only recorded about 5 percent national coverage since its inception in 2005. Other countries in the sub-Saharan Africa have their various levels in the organisation of health insurance programmes for their citizenry.

Methods

Study setting

The study was done at the out-patient department of Supreme Faith Hospital, Ado-Ekiti, Nigeria. The hospital is an accredited facility by the National Health Insurance Scheme (NHIS) for the purpose of providing health care services to the enrollees under the scheme.

Ethical clearance

Permission was obtained from the Hospital Ethics committee, and written consent (in form of a ‘ticked consent’) was also obtained from the participants after due explanation of the survey and assurance of anonymity and confidentiality.

Study design

This was a cross-sectional survey that made use of pre-tested questionnaire which was administered to volunteers.

Inclusion criteria

Adults attending the clinic who gave consent
Conscious and alert patients who could answer questions adequately

Exclusion criteria

Very young children were excluded from the study
Severe emergencies, including unconscious patients, were excluded
Those with severe mental illness were also excluded.

Sample size estimation

This was estimated to be 120. The sample size was calculated using the formula (Araoye, 2003):

\[ N = \frac{Z^2pq}{d^2} \]

Where \( z \) = standard normal deviation which is usually set at 1.96 and corresponds to the 95% confidence level.

\( P \) = the proportion in the target population estimated to have a particular characteristic i.e. prevalence here 50%. \( d \) = degree of accuracy desired which is usually set at 0.05.
Data collection and analysis

The data collection was done by the researcher and trained assistants within the month of March, 2014. The content of the questionnaire was carefully translated into local language to those who could not read English without altering the meaning of each question. The questionnaires were collected from the participants immediately after answering them to avoid loss on transit. The information obtained from respondents was coded for easy translation into data. Data analysis was done using SPSS version 16.

Results

There were 120 returned and analyzable questionnaires. Table 1 is a representation of respondents’ biosocial characteristics. The modal age group in this study was 21-40 years (29.2%). There were more females (64.2%) than males (35.8%) in the study. A greater percentage of the respondents were married (60.0%), others were single (28.3%), separated (8.3%), divorced (0.8%), and widowed (2.5%). A total number of 8 (6.7%) respondents only had primary education, 44 (36.7%) secondary education, 58 (48.3%) tertiary, 8 (6.7%) had no formal education, while 2 (1.7%) did not indicate their educational status. On the respondents’ employment status, 50 (41.7%) were employed while 31 (25.8%) were not employed. The students among them were 24 (20.0%) and the apprentices were 6 (5.0%), while the rest did not specify their employment status (5.0%) or decided to remain silent on it (2.5%).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Biosocial data of respondents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Frequency</td>
</tr>
<tr>
<td>AGE GROUP</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
</tr>
<tr>
<td>&lt;=20</td>
<td>10</td>
</tr>
<tr>
<td>21-30</td>
<td>35</td>
</tr>
<tr>
<td>31-40</td>
<td>29</td>
</tr>
<tr>
<td>41-50</td>
<td>25</td>
</tr>
<tr>
<td>51-60</td>
<td>13</td>
</tr>
<tr>
<td>61 and above</td>
<td>4</td>
</tr>
<tr>
<td>SEX</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>43</td>
</tr>
<tr>
<td>Female</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
<tr>
<td>MARITAL STATUS</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>34</td>
</tr>
<tr>
<td>Married</td>
<td>72</td>
</tr>
<tr>
<td>Separated</td>
<td>10</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
</tr>
<tr>
<td>Widowed</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
<tr>
<td>PRESENT EDUCATIONAL STATUS</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>8</td>
</tr>
<tr>
<td>Secondary</td>
<td>44</td>
</tr>
<tr>
<td>Tertiary</td>
<td>58</td>
</tr>
<tr>
<td>Others</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
</tbody>
</table>
Table 2 contains the information on hospital visits of respondents with mode of payment for medical treatment. The majority of them, 103 (85.8%), indicated that they had visited hospital for treatment in the past but the rest did not. A far greater percentage of the respondents (65.0%) accessed health care through out-of-pocket payment modality; only 10.8% were insured (Table 2(ii)). Others accessed care through free government health care programs (7.2%), while a total of 16.7% did not specify their mode of payment for health care services.

Additionally, on the aspect of NHIS awareness (Table 2), 82 (68.3%) were aware of NHIS while 38 (31.7%) were not aware. The modal year group was 1-3 years (40.0%). Meanwhile, the information on enrolment into NHIS revealed that only 38 (31.7%) were enrolled as at the time of this study. Others 82 (68.3%) were yet to be enrolled into the scheme. Table 3 is the logistic regression model for the study. The Chi-square p-value was 0.045.

Table 2: Hospital visit, awareness, and enrolment under NHIS.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital visit of respondents (Have you visited hospital before for medical treatment?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>103</td>
<td>85.8</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>14.2</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
<tr>
<td>Hospital visit of respondents (Mode of payment for health care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (no response)</td>
<td>17</td>
<td>14.2</td>
</tr>
<tr>
<td>Out-of-pocket payment</td>
<td>78</td>
<td>65.0</td>
</tr>
<tr>
<td>Insurance (e.g. NHIS or others)</td>
<td>13</td>
<td>10.8</td>
</tr>
<tr>
<td>Free govt. Health care program</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Awareness of NHIS (Are you aware of NHIS?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>82</td>
<td>68.3</td>
</tr>
<tr>
<td>No</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
<tr>
<td>Awareness of NHIS (If yes for how long have You been aware of it?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (no response)</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>&lt;1year</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td>1-3years</td>
<td>48</td>
<td>40.0</td>
</tr>
<tr>
<td>4-6years</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>&gt;6years</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
<tr>
<td>Enrolment under NHIS (Are you an enrolee under NHIS?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>31.7</td>
</tr>
<tr>
<td>No</td>
<td>82</td>
<td>68.3</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>
## Table 3: Logistic regression: ‘Are you aware of any Health Insurance Program vs. Present educational status’

<table>
<thead>
<tr>
<th>Are you aware of any Health Insurance Program</th>
<th>Present educational status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0</td>
<td>Primar</td>
</tr>
<tr>
<td>% within Present educational status</td>
<td>50.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>1</td>
</tr>
<tr>
<td>% within Present educational status</td>
<td>50.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Total</td>
<td>% within Present educational status</td>
<td>2</td>
</tr>
<tr>
<td>% within Present educational status</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The Chi-square value, p=0.045.

## Discussion

In consideration of the daunting challenge facing both the patients who access health care facilities through out-of-pocket payment and the Providers of health care who need to continue their practice despite the present economic downturn, this study has painstakingly assessed the public awareness of the National Health Insurance Scheme (NHIS) among patients accessing health care in Supreme Faith Hospital, Ado-Ekiti, Nigeria. Ado-Ekiti is the Capital of Ekiti State in the south west geopolitical zone of Nigeria.

There were more females (64.2%) than males (35.8%) among the respondents in the study. This could be as a result of improved uptake of antenatal, post-natal, and other maternal/child care aspects of health care services. Also, in support of this, was the greater number of respondents in the various reproductive age groups viz 21-30 years (29.2%), 31-40 years (24.2%) and 41-50 years (20.8%). Other age groups did not individually record above 10.8%. Additionally, ‘married’ respondents (60.0%) were indicated as the highest among the various marital statuses in the study.

A greater number of respondents were educated; Secondary (36.7%) and Tertiary education (48.3%). This was against the number of respondents under Primary education (6.7%), none (6.7%) and undecided (1.7%). However, the association between educational level and awareness of NHIS was weakly statistically significant (p=0.045). In the study done by Sabouhi et al (2011), educational level and awareness were statistically significant, although the study was not particularly on NHIS.

Worthy of note was the greater number of respondents (68.3%) who were aware of NHIS compared with those who were not aware (31.7%). Out of this (those aware) about 56.7%,...
only got to know about NHIS for the past 3 years. This reveals that increasing publicity of the Scheme must have been put in place for the past 3 years. Earlier studies done within the South west geopolitical zone of Nigeria after few years of the inception of NHIS, reported high levels of awareness. Omosehin et al. (2006) reported 99.5% awareness among respondents in the study, while Sanusi and Awe (2009) had 87% awareness. The study by Omosehin et al. (2006) was on health care providers of selected health care facilities in Lagos. Sanusi and Awe (2009) researched on health care consumers residing at Ibadan, Nigeria. Both cities are urban areas in Nigeria and are more developed than the area of the present study. Meanwhile, the present study was done on patients who were accessing health care services from an accredited health care facility in Ado-Ekiti, Nigeria. Although the awareness was high among respondents, regrettably only 31.7% of respondents were enrolled under the Scheme as at the time of data collection.

Conclusion

The awareness of NHIS was high among patients who were accessing health care services in an accredited facility in Nigeria. However, the number of enrollees among them was much lesser than expected. A greater number of respondents still rely on out-of-pocket expenditure for payment for health care services. It is recommended that effort should be geared towards improving the rate of enrolment process, especially in the face of the heavy burden of out-of-payment expenditure in health care.

Recommendations

(1) There is still a significant number of Nigerians who are not under any health insurance coverage. Therefore, NHIS management should be encouraged by the government to improve on enrolment of Nigerians into the Scheme for wider coverage.

(2) Further research on this topic should be encouraged by using more in-depth approach through qualitative research method to uncover other issues which may not be touched by a quantitative study.

References


A Retrospective Study of Pulmonary Tuberculosis (PTB) Prevalence among Patients in Eastern Nigeria Medical Centre Enugu, Nigeria

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Abstract

A retrospective study aimed at ascertaining the prevalence of Pulmonary TB amongst patients visiting Eastern Nigeria Medical Centre, Enugu State was conducted between September, 2015 and November, 2015. Sputum samples were obtained from one hundred and twenty patients. Samples were smeared on glass slides, stained using Ziehl Neelsen Stain and observed under light (oil immersion) microscopy. Data obtained were analysed using SPSS Statistic Base 17.0, where descriptive analyses such as sum, percent distribution, and mean, were computed. While Chi-Squared Goodness of Fit, degree of differences, p-value in order to statistically determine if any significance between variables such as age groups, sex of subjects, AFB positivity and prevalence existed. The results showed positive results for tuberculosis with prevalence of 42 (35%) out of 120 subjects. The age group 21-30 years had the highest prevalence of 18 (43%) out of 42 of PTB positive subjects. There was no significant difference between sex of subjects with PTB positivity (X²: 1.33 at P= 0.12). There was significant difference between age groups of subjects with PTB positivity (X²: 33.18 at P= 0.01). It is observed that PTB is still a serious health burden in this part of the world, thus, there is need for improved TB awareness, treatment and control programme.

Keywords: Tuberculosis (TB), Pulmonary, Ziehl Neelsen.

Introduction

Tuberculosis (TB) remains one of the leading global infectious killer diseases around the world. (CDC, 2015)

TB has become second ranked in global disease burden, which means that millions of people have been infected by TB bacteria (WTD, 2008). Any person with compromised immune system like people who are infected with HIV, people who use tobacco, malnourished persons or diabetics have a much higher risk of falling ill (CDC, 2014). TB is still a major public health burden in Nigeria, with the country ranking 5th among the 22 high burden countries which collectively bear 80% of global burden of TB. (WHO, 2012).

Tuberculosis is an infectious disease that occur in pulmonary and extra pulmonary sites caused by various strains of mycobacterium normally Mycobacterium tuberculosis (USAID).

M. tuberculosis is also carried in airborne particles known as droplet nuclei, of 1–5 microns diameter (Khan, 2006). TB is spread from person to person through the air. Germs are expelled into the air when people with pulmonary TB cough, spit or sneeze. It requires just inhaling a few germs to become infected. Only people with active TB can spread the disease to others. (Taura et al., 2008)

Factors that determine them, tuberculosis transmission includes

Susceptibility -Susceptibility (immune status) of the exposed individual. (Shetty et al., 2006)

Infectiousness- Infectiousness of the person with TB disease is directly related to the number of tubercle bacilli that he or she expels into the air. (De jong et al., 2010)
Environment- Environmental factors that affect the concentration of *M. tuberculosis* organisms are space, ventilation, air circulation and specimen handling (Gupta, *et al.*, 2011).

The people that at risk of TB are

HIV infected patient, younger children under 5 years of age, persons who were infected with *M. tuberculosis* within the past 2 years, persons that have history of untreated or inadequately treated TB disease and individuals that receive immunosuppressive therapy like immunosuppressive drug therapy following organ transplantation (WHO, 2008). Others are persons that suffer diabetes mellitus, silicosis, leukaemia, or cancer of the head, neck, lung and chronic renal failure, persons who had past history of gastrectomy or jejunoileal bypass, persons who weigh less than 95% of their ideal body weight, cigarette smokers and persons who abuse drugs or alcohol (WHO, 2011). Also populations defined locally as having an increased incidence of disease due to *M. tuberculosis*, including medically deprived and low-income populations. (Alan, 2002)

Early symptoms of active TB can include fever, weight loss, night sweats, and loss of appetite. Symptoms may become chronic and more debilitating with cough, bloody sputum (saliva) and chest pain. Symptoms of extra pulmonary TB, depends upon the organ or area affected (Corbett *et al.*, 2006)

Adequate ventilation and limited contact with patients can prevent TB. Latent TB is a phenomenon when people who are infected with *Mycobacterium tuberculosis* but do not get sick nor spread the bacteria to others (Vestal, 1997).

TB vaccine called BCG (Bacille Calmette-Guérin) has been recommended by World Health Organization for infants (Jan *et al.*, 1992). BCG is fairly effective in protecting small children from severe TB complications but in adult, it does not protect well against lung TB. (Rusch-Gerdes *et al.*, 2006)

Objective of this study are

1. To determine the number of patients infected with pulmonary tuberculosis by sputum examination in Enugu metropolis.
2. To ascertain gender and age predilection.
3. To compare results obtained with that of other researchers.

Materials and methods

The study was done in Eastern Nigeria Medical Centre Enugu, Nigeria.

Targeted groups, sample size and sample collection

Six age groups were selected for this study, which were 11-20, 21-30, 31-40, 41-50, 51-60 and 61- above years of age respectively.

A total of one hundred and twenty (120) patients cutting across age groups and of both sex were surveyed. Three sputum samples of early morning spot were collected from each patient. Patients were told to cough deeply into a sterile container at a well ventilated environment and away from people. The obtained sputum samples after firmly closing the lid were registered immediately after collection; the side and cap of the container were labelled accordingly, and stored in a cool, dry and dark place (WHO, 2010). The sample collection was done between September 2015 to November, 2015. The smear was prepared using Ziehl Neelsen Staining method according to WHO guideline. (WHO, 2000)

Microscopy identification of acid fast bacilli (AFB)

The smear was stained, dried and viewed under oil immersion using electric light microscope. AFB is seen as a fine red rod against blue background. Interpretation of results was done using guideline given by WHO. (WHO, 2006)(Sharma *et al.*, 2011)

Statistical Analysis: Data obtained were analysed using SPSS Statistic Base 17.0, where descriptive analyses such as sum, percent distribution, and mean e.t.c. were computed. While Chi- Squared Goodness of Fit, degree of differences, p- value in order to statistically
determine if any significance between variables such as age groups, sex of subjects, AFB positivity and prevalence existed.

Results

The retrospective study of total number of 120 Patients who have TB and who did not have TB was obtained in Infections disease clinic of Eastern Nigeria Medical Centre, Enugu. 76 of them i.e. 63% were male and 44(37%) were female.

The study also shown PTB prevalence of 42(35%) out of 120 subjects (table 1), with highest prevalence of 28 (23%) among male subjects in table 2 below. It was observed in (table 2 and figure 4) that patients in age group at 21-30 years were the most affected 48 (40%). This was followed by patients in 31-40 age groups of 24 (20%). Patients in age group of 10-20 years and patients in age group of 61 and above did not show positive results. It was also observed that out of 120 samples, 78 (65%) showed negative AFB test.

The mean age of the distribution was 36, the median age was 32, the modal age distribution was 21-30 and the age range was 54.

There was no significant difference between sex of subjects with PTB positivity ($X^2$: 1.33 at $P=0.12$). There was significant difference between age groups of subjects with PTB positivity ($X^2$: 33.18 at $P=0.01$).

Table 1: Sex Distribution of Occurrence of M. Tuberculosis

<table>
<thead>
<tr>
<th>Sex</th>
<th>Absolute Frequency</th>
<th>Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>28</td>
<td>24%</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>35%</td>
</tr>
</tbody>
</table>

Figure 1: Bar chart showing the positive result among sex

Table 2: Age Distribution of Occurrence of M. tuberculosis

<table>
<thead>
<tr>
<th>Age Group (Year)</th>
<th>Absolute Frequency</th>
<th>Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>12</td>
<td>10%</td>
</tr>
<tr>
<td>21-30</td>
<td>48</td>
<td>40%</td>
</tr>
<tr>
<td>31-40</td>
<td>24</td>
<td>20%</td>
</tr>
<tr>
<td>41-50</td>
<td>12</td>
<td>10%</td>
</tr>
<tr>
<td>51-60</td>
<td>18</td>
<td>15%</td>
</tr>
<tr>
<td>61-above</td>
<td>6</td>
<td>5%</td>
</tr>
</tbody>
</table>
Figure 2: Bar chart showing positive result among age group.

Table 3: Frequency distribution of Positive and Negative result

<table>
<thead>
<tr>
<th>Result</th>
<th>Absolute Frequency</th>
<th>Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>42</td>
<td>35%</td>
</tr>
<tr>
<td>Negative</td>
<td>78</td>
<td>65%</td>
</tr>
</tbody>
</table>

Figure 3: Pie chart showing positive and negative result.

Figure 4: Scatter diagram of specimen result by age.

Discussion

The study analysis showed 21-30 age group having the highest percent distribution of 48 (40%) out of 120, followed by 31-40 age group with percent distribution of 24(20%) and male subjects had the higher distribution among the sexes 28 (24%) out of 120 subjects. The result of the current study showed PTB prevalence of 42(35%) out of 120 subjects within the period of the study. Highest prevalence of 18 (43%) out of 42 AFB positive subjects was obtained from 21-30 age group. This corroborates WHO (2000) study which asserts that it is safe to estimate that 50 percent of the population above the age of 20 years is infected and remain at risk of the disease throughout their lifetime. It might be reasonable to say that at this age, most individuals experience increased interaction and environment physical stress and exposure which may increase the susceptibility of their contracting infections. It was also observed that prevalence of PTB is higher in male among sexes 28(24%) out of 42. This has vividly shown that male subjects are more infected than the rest of the population. These figures were similar to findings by NTI (1974) which documented the prevalence of PTB that
among adults in India was 35% and 25% in males and females respectively. It also corroborates the work of Taura et al, 2008 where male subjects had prevalence of 61.5% as against 38.5% in the females. This could be due to the fact that male subjects are more exposed to risk factors of TB such as smoking which can make them more prone to the infection. The prevalence of TB within the study area was high. The result showed that 35% of the total sample population had a positive result. A picture of the larger population can be seen from this analysis and it can be deduced that tuberculosis disease is still a health menace in Nigeria.

Social factors prove tuberculosis as a social disease with medical aspects welfare. The social factors may be associated with non – medical factors like low quality of life, poor housing and overcrowding, over population, malnutrition, lack of education, large families, and lack of awareness of cause of illness; of which many communities in Nigeria are experiencing. All these factors are interrelated and contributed to the occurrence and spread of tuberculosis. Equally, there has been a decline in public health measures in many parts of developing countries, such as lack of access to childhood vaccination programmes, inadequate ante-natal care in pregnancy, and inadequate fund releasing for research into diseases like TB. (WHO, 2008)

**Conclusion**

This research is concerned with the retrospective study with the prevalence of tuberculosis among patients in Eastern Nigeria Medical Centre, Enugu State. It was observed that high rate of ingestion of Mycobacterium tuberculosis was prevalent in males than in female generally; the frequency was relatively high with regards to the entire population. This can be explained by the apparent low standard of living and inadequate social and welfare services in Enugu State.

The individuals most susceptible to TB infection were those within the age bracket of 21 and 30 years. This class of people are those involved in active social activities and invariably, exposed to more TB attack. This implies that the fight against TB cannot be said to be complete without incorporating sexual education / re-orientation, strict adherence to Directly Observed Treatment Short course (DOTS)(Vijay et al., 2004), Health education, personal hygiene, improved social and public health services, in order to curb / control the disease.

**Recommendation**

Sexual education / re-orientation: Due to the close relationship between HIV/AIDS and pulmonary tuberculosis, it is important that proper sexual education is done especially among teenagers in secondary school. This will go a long way in improving the immune status of the populace at large.

Strict adherence to Directly Observed Treatment Short course (DOTS): This is the current regimen which is involves initial intensive therapy of 2 months duration followed by maintenance therapy. The direct observation will ensure proper compliance to prevent drug failure.

Health education: This should be incorporated in the school curriculum such that at the formative stages, pupils/students are able to identify the symptoms and management of pulmonary tuberculosis.

Personal hygiene: Improved personal hygiene with proper ventilation will prevent spread of PTB which is airborne.

Improved social and public health services, in order to curb / control the disease: Availability of health care services especially at primary level in the rural areas will go a long way in controlling PTB.

**Acknowledgements**

I want to use this opportunity to appreciate the Almighty God for the grace and strength to carry out this study. I will not fail to thank the staff of Eastern Nigeria Medical Centre for
their great support towards this work and finally to my lovely family for their patience. Thank you.

God bless you all.

References


[18.] World Health Organization (2006): Emergence of XDR-TB. WHO concern over extensive drug resistant TB strains that are virtually untreatable.
Health Seeking Behaviour Towards Sexually Transmitted Infections among Students of a Nigerian Tertiary Institution

Article by Saratu O. Ajike, Elendu Zikar1 Ajike Saratu2 Ogunsanmi Ololade3, Olaoye Titilayo4

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Abstract

Sexually Transmitted Infections have a very serious impact on sexual and reproductive health worldwide and they rank among the top five disease categories for which young adults seek healthcare. Therefore this study assessed the health seeking behavior of undergraduate students of Tai Solarin University of Education (TASUED) towards STIs.

The study was a descriptive cross-sectional survey that applied both qualitative (focus group discussion) and quantitative methods (questionnaire) of data collection. Four hundred and thirty-one respondents participated in the study. Data was analyzed using SPSS version 21 to generate descriptive (frequency tables and charts) and inferential statistics (correlation).

Results showed that majority (74.2%) of the respondents have heard of STIs; HIV (80%) was the most commonly known, and Trichomoniasis (128; 29.7%) as least. The major source of information was television (350; 81.2%); most preferred treatment source was private hospitals (205; 47.6%). Self-preference, inconvenience as a result of symptoms and knowledge of a place to get treatment were the best motivators of seeking treatment. Perceived risk of ill-health was high at 19.25 on a 28 point scale. There was a positive significant relationship between treatment options and perceived risk of ill-health (r = .318, p < .01).

Respondents had a fair health seeking behavior towards STIs, but misconceptions still exist. More synchronized actions need to be made by schools, the government, NGOs, the media and other stakeholders to enhance young people’s health seeking behavior towards STIs.

Keywords: Health seeking behavior, STIs, Youths, Ill-health, Source of care, Students

Background

It has been observed that a considerable population of young people, are sexually-active and increasingly engage in risky sexual behaviours (Okereke, 2010) which continues to expose them to a number of sexually transmitted infections. Globally, it is estimated that 357 million new cases of curable STIs occur each year (WHO, 2015) of which the largest burden occurs in 20 to 24 and 15 to 19 year olds each year (WHO, 2016). Nigeria, which happens to be the most populous country in Sub-Saharan Africa, has a high prevalence of STIs among young people (Adedimeji, Omololu, & Odutolu, 2007; Oladejo & Fayemi, 2011). It is also estimated that about 3 million Nigerians get infected with STIs every year (NASCOP, 2015), and STIs are one of the top five reasons for which adults seek care in developing countries (WHO, 2014).

In rural southeast Nigeria, the prevalence of STIs was found to be as high as 17% among adolescent females (Mmari, Oseni & Fatusi, 2010). When only sexually active women were considered, 17–19-year-olds had the highest prevalence of Chlamydia (11%) and candidiatisis (26%), and were also the age-group most likely to have had any STI (44%). Women younger
than 17 had the highest prevalence of trichomoniasis (11%), and nearly 20% also had symptomatic candidiasis (Mmari et al, 2010).

A study carried out in 2010, showed that amongst adolescents who reported having sex, 27.2 percent had STIs, mostly gonorrhea (33.9%) and Syphilis (22.8%) and they were not willing to patronize any formal health facility because sexual activities were greatly perceived as a preserve for the married, while premarital sex a sub-culture of deviants. This rigid idea had a negative effect on their health seeking behavior when confronted with STIs (Okereke, 2010). Although there is increasing evidence that STIs are a common problem among youth in Nigeria (Mmari et al, 2010), it has remained a very silent epidemic due to the stigma surrounding its occurrence (Kadiri, Ahmad & Mustaffa, 2014).

The consequence has been sustained STI epidemics with increased spread of HIV/AIDS, leading to huge personal and economic loss. A number of studies (Olakolu et al, 2011; Isiaka-Lawal et al, 2014; Oyewole et al, 2010) carried out in Western Nigeria have shown a strong relationship between the presence of other STIs and the easy transmission and high infectivity of HIV, which could be a consequence of delay in seeking care or not seeking care at all. In a country where healthcare seeking remains ahigly complex and poorly understood subject even more so where competing systems of traditional, informal and western medicine coexist (Mmari et al, 2010), efforts need to be made to provide empirical evidence to ease understanding which has practical and scientific relevance for the effective control of STIs.

A good understanding of health seeking behaviour can promote effective treatment which influences the duration of infectiousness and helps to further reduce complications (Jayabasker, 2007). Furthermore, information obtained can promote the provision of more sensitive youth health systems. Therefore this study sought to describe the health seeking behaviour of a youth population towards STIs.

**Methodology**

**Study design, setting and subjects**

A descriptive cross-sectional survey that applied both qualitative and quantitative methods of data collection was done. The study was carried out among 431 undergraduate students in a public premier university of education in southwest Nigeria. The total sample was determined using the formula for calculating single proportions by Abramson and Gahlinger (2002). Participants were selected using multistage sampling method. The 4 colleges in the University were considered for the study. By balloting, 3 departments were chosen from each college.

A questionnaire which was pretested (Cronbach’s alpha coefficient = 0.87) sought out information on the sociodemographic characteristics, sources of information and knowledge, factors influencing choice of treatment, treatment options, and perceived risk of ill-health if treatment is delayed or ignored. Data was cleaned, coded and analyzed with the Statistical Package for Social Sciences version 21.

**Instrument for data collection and technique**

The instruments used to collect data for this study were: a structured, self-developed, 83-itemed questionnaire and a semi-structured, self-developed, focus group discussion guide.

Two focus group discussions (boys and girls separately) were conducted in English language. Each session lasted an hour and was made up of 8 undergraduate students who were comfortable discussing issues on sexuality and STIs and possessed the ability to express themselves in a group setting.

The focus group discussion guide was made up of 2 main sections. These included (1) the introductory section. In this section the moderator introduced herself and the co-moderator/recorder. All the participants were given the opportunity to introduce themselves. This was followed by a thorough explanation of the study, its purpose and objectives, and the process of carrying out the research including verbal informed consent. This section was made up of eight (8) main interview questions and twenty eight (28) probing questions.
The boys and girls were separated in order to ensure that every participant contributed and felt comfortable to discuss freely. The sessions were recorded using a phone recorder and the co-moderator took notes of verbal responses, and notable body languages such as feet shuffling, excessive eye blinking, nudging and other forms of non-verbal communication.

**Data analysis**

Four hundred and thirty six questionnaires were distributed but only 431 of them were filled correctly and returned. Hence only 431 questionnaires were included in the analysis. Univariate analysis was used to derive percentages and frequencies. Recorded data was played severally and transcribed verbatim. Transcribed data was compared with the handwritten data to ensure consistent tally and was then organized into themes.

**Test of hypothesis**

A test of hypothesis using bivariate analysis was carried out to determine the association between perceived risk and source of care stated as.

- $H_0$: There is no association between perceived risk of ill health and source of care for STIs.
- $H_1$: There is an association between perceived risk of ill health and source of care for STIs.

**Ethical consideration**

The research was duly approved by the Babcock University Health Research Ethics Committee. Other permissions to ease access to the student population were obtained from the student affairs office of the study area. The recruitment of respondents was voluntary and based on their informed consent in a letter attached on each questionnaire. Participants were given the choice to freely withdraw their participation whenever they decided not to continue with the study. To ensure maximum confidentiality and anonymity during and after data collection, names of respondents and other forms of identification were not required on the questionnaires.

**Results**

Table 1 shows the demographic profile of respondents. The mean age was 20 ± 4 years. The highest represented age range was 20-24 years. Two hundred and thirty respondents (53.4%) were females and 123 (28.5%) were in relationships.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>n=431 Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>93</td>
<td>21.6</td>
</tr>
<tr>
<td>20-24</td>
<td>248</td>
<td>57.5</td>
</tr>
<tr>
<td>25-29</td>
<td>83</td>
<td>19.3</td>
</tr>
<tr>
<td>30 and above</td>
<td>7</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>230</td>
<td>53.4</td>
</tr>
<tr>
<td>Male</td>
<td>201</td>
<td>46.6</td>
</tr>
<tr>
<td><strong>Relationship status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>281</td>
<td>65.2</td>
</tr>
<tr>
<td>Dating</td>
<td>123</td>
<td>28.5</td>
</tr>
<tr>
<td>Married</td>
<td>23</td>
<td>5.3</td>
</tr>
<tr>
<td>Separated</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2 outlines the respondents’ knowledge about STIs. A total of 320 (74.2%) respondents had heard of STIs while 111 (25.8%) had not. The three major sources of information in decreasing order of importance were television, 350 (81.2%), social media, 338 (78.4%) and the internet, 337 (78.2%). The least source of information on STIs was parents 283 (65.7%). Hospital/Health 320 (76.1%) workers were also significant sources of information for the respondents.

When participants of the focus group discussion were asked if they had heard of STIs before and what their source of information was, a female participant had this to say:

“I’ve heard about STIs before. I’m the kind of person that checks my HIV status every December so I’m really exposed to it”.

During the male session, a participant said:

“I have heard about STIs from health workers outside the school and other groups of people”.

The 3 most known STIs were HIV, (345; 80%), Gonorrhoea (319; 74%) and Syphilis, (236; 64.8%). The least known was Trichomoniasis (128; 29.7%) and some noted Diabetes (79; 18.3%) and Sickle Cell (79; 18.3%) as types of STIs. Whereas during the focus group discussions the only STIs mentioned were gonorrhoea and HIV.

The most popularly known routes of transmission were unprotected sex (397; 92.1%), sharing unsterilized needles and syringes, (342; 79.4%) and blood transfusion, (335; 77.7%). Similarly, the routes of transmission mentioned during the discussion were sex including oral sex, unsterilized sharps, blood transfusion and toothbrush sharing.

There were misconceptions about the routes of transmission, such as via cough and sneeze from infected persons (178; 41.3%), touching an infected person (55; 12.8%), and sharing the same toilet with an infected person (224; 52%). The most commonly known symptoms of STI were abnormal discharge from penis/vagina (349; 81%), painful urination (341; 79.1%) and weight loss (324; 75.2%). The least known was rashes on the body (205; 47.6%). Discussants similarly mentioned weakness, fever, rashes, weight loss, and vaginal/penile discharge as symptoms of STIs. When asked if there were differences between males and females in the manifestation of STI symptoms, they all agreed there were gender differences. A male participant said:

“Boys and girls may have the same discharge but the way it will come out from their ovaries is not the way it will come out from the guy’s penis”

A female participant also said:

“There is difference because the symptoms appear quicker in ladies than in guys”

The most common mode of prevention known by the respondents was making use of condoms during sex (379; 87.9%), avoiding contact with the blood of an infected person (344; 79.8%) and having one sex partner (309; 71.1%). There were also misconceptions on the modes of prevention such as avoiding toilets used by infected people (257; 59.6%) and taking antibiotics before and after sex (241; 55.9%).

The knowledge score revealed a very substantial level of high knowledge among respondents as 349 (81.1%) had a high level of knowledge while 82 respondents (19%) had low level of knowledge. The mean score for knowledge was 19.28 which also connotes that generally, the level of knowledge on STIs was quite high among respondents.
In determining the level of knowledge of each respondent about STI, a thirty (30) point scale was developed. Question eight (8) with 8 stems on names of STIs known; question nine (9) with 9 stems on knowledge of routes of STI transmission, question ten (10) with 7 stems on knowledge about symptoms of STIs and question eleven (11) with 6 stems on knowledge of how STIs can be prevented, were scored on the questionnaire. Therefore, the total points obtainable by a respondent were thirty (30). Each correct response was scored one and no response or wrong response was scored zero.

Those who scored fifteen points or less (≤15) were considered as having low knowledge while those who scored sixteen points and above (≥16) were considered as having high knowledge.

**Table 2: Respondents knowledge about STIs**

<table>
<thead>
<tr>
<th>Have you ever heard of STIs?</th>
<th>Frequency n = 431</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>320</td>
<td>74.2</td>
</tr>
<tr>
<td>No</td>
<td>111</td>
<td>25.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of Information</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>350</td>
<td>81.2</td>
</tr>
<tr>
<td>Social media</td>
<td>338</td>
<td>78.4</td>
</tr>
<tr>
<td>Internet</td>
<td>337</td>
<td>78.2</td>
</tr>
<tr>
<td>School</td>
<td>332</td>
<td>77.0</td>
</tr>
<tr>
<td>Hospital/Health workers</td>
<td>328</td>
<td>76.1</td>
</tr>
<tr>
<td>Public talks/Seminars</td>
<td>306</td>
<td>71.0</td>
</tr>
<tr>
<td>Friends</td>
<td>303</td>
<td>70.3</td>
</tr>
<tr>
<td>Print media e.g. newspapers, fliers etc.</td>
<td>294</td>
<td>68.2</td>
</tr>
<tr>
<td>Radio</td>
<td>299</td>
<td>69.4</td>
</tr>
<tr>
<td>Parents</td>
<td>283</td>
<td>65.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Sexually Transmitted Infection</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>345</td>
<td>80.0</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>319</td>
<td>74.0</td>
</tr>
<tr>
<td>Syphilis</td>
<td>236</td>
<td>64.8</td>
</tr>
<tr>
<td>Human Papilloma Virus</td>
<td>154</td>
<td>35.7</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>130</td>
<td>30.2</td>
</tr>
<tr>
<td>Trichomoniiasis</td>
<td>128</td>
<td>29.7</td>
</tr>
<tr>
<td>Diabetes</td>
<td>79</td>
<td>18.3</td>
</tr>
<tr>
<td>Sickle Cell</td>
<td>79</td>
<td>18.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How can a person contract an STI?</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through unprotected sex</td>
<td>397</td>
<td>92.1</td>
</tr>
<tr>
<td>By sharing unsterilized needles &amp; syringes</td>
<td>342</td>
<td>79.4</td>
</tr>
<tr>
<td>Through blood transfusion</td>
<td>335</td>
<td>77.7</td>
</tr>
<tr>
<td>From mother to child through childbirth</td>
<td>271</td>
<td>62.9</td>
</tr>
<tr>
<td>From mother to child through breastfeeding</td>
<td>237</td>
<td>55.0</td>
</tr>
<tr>
<td>By sharing same toilet with an infected person</td>
<td>224</td>
<td>52.0</td>
</tr>
<tr>
<td>From exposure to cough and sneeze from infected person</td>
<td>178</td>
<td>41.3</td>
</tr>
<tr>
<td>By kissing an infected person</td>
<td>124</td>
<td>28.8</td>
</tr>
<tr>
<td>By touching an infected person</td>
<td>55</td>
<td>12.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What are the common Symptoms of STIs?</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal discharge from penis/vagina</td>
<td>349</td>
<td>81.0</td>
</tr>
<tr>
<td>Painful urination</td>
<td>341</td>
<td>79.1</td>
</tr>
</tbody>
</table>
In reference to table 3 below, out of 431 respondents only 71 (16.47%) admitted to have contracted an STI before and had sought treatment for STIs from private hospitals (30; 7.0%) most times and the least, chemist shops (4; 0.9%).

Top reasons for seeking treatment included knowledge of treatment sites (238; 55.2%), Inconvenience from symptoms (249; 57.8%) and self-preference (252; 58.5%). Religious reasons (143; 33.2%) had the least influence on choice to seek or not seek treatment.

Table 3: Respondents who have had STIs and health seeking behaviour

<table>
<thead>
<tr>
<th>Have you contracted an STI before?</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>71</td>
<td>16.47</td>
</tr>
<tr>
<td>No</td>
<td>360</td>
<td>83.53</td>
</tr>
</tbody>
</table>

If yes did you seek treatment?

| Yes | 41 | 57.75 |
| No | 30 | 42.25 |

If yes, where did you seek treatment?

| Private hospital | 30 | 7.0 |
| Government hospital | 26 | 6.0 |
| Chemist shop | 4 | 0.9 |
| Traditional clinic | 11 | 2.6 |
| None | 360 | 83.5 |

What motivates you to seek treatment for an STI?

| Low cost of treatment | 215 | 49.9 |
| Proximity to clinic, hospital, traditional clinic | 214 | 49.7 |
| Self –preference | 252 | 58.5 |
| Inconvenience as a result of symptoms | 249 | 57.8 |
| Knowledge of a place to get treatment | 238 | 55.2 |
| Attitude of care giver | 204 | 47.3 |
| Religious reasons | 143 | 33.2 |

According to table 4, the most preferred source of treatment for STIs among most of the respondents were private hospitals (205; 47.6%) followed by government hospitals (191; 44.3%). Self-medication (18; 4.2%) was the least treatment option. Similarly, among discussants, private clinics were preferred to government clinics, while only a few mentioned family physicians and nurses as their most preferred source of care.

Table 4: Respondents preference for treatment

<table>
<thead>
<tr>
<th>Where would you prefer to seek treatment if you had an STI?</th>
<th>Most Preferred</th>
<th>More Preferred</th>
<th>Least Preferred</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Hospital</td>
<td>205 (47.6%)</td>
<td>102 (23.7%)</td>
<td>39 (9.0%)</td>
<td>85 (19.7%)</td>
</tr>
<tr>
<td>Government Hospital</td>
<td>191 (44.3%)</td>
<td>107 (24.8%)</td>
<td>45 (10.4%)</td>
<td>88 (20.4%)</td>
</tr>
<tr>
<td>Traditional clinics</td>
<td>30 (7.0%)</td>
<td>33 (7.7%)</td>
<td>62 (14.4%)</td>
<td>306 (71.0%)</td>
</tr>
<tr>
<td>Chemist shops</td>
<td>19 (4.4%)</td>
<td>59 (13.7%)</td>
<td>127 (29.5%)</td>
<td>226 (52.4%)</td>
</tr>
<tr>
<td>Self-medication</td>
<td>18 (4.2%)</td>
<td>16 (3.7%)</td>
<td>59 (13.7%)</td>
<td>338 (78.4%)</td>
</tr>
</tbody>
</table>
Perceived risk of ill-health

In determining the respondent’s perceived risk of ill health as a result of STIs, (table 5a); a twenty eight (28) point scale developed by the researcher was used. Question twenty (20) with 7 stems of questions that elicited feelings on how serious they think STIs could get were re-coded on the questionnaire.

Therefore, the total points obtainable by a respondent were twenty eight (28). Those who scored fourteen points or less (≤14) were considered as having a low perceived risk of ill-health as a result of STIs while those who scored fifteen points and above (≥15) were considered as having a high perceived risk of ill-health as a result of STIs.

Of the 431 respondents, 372 (86.5%) respondents recorded a high level of perceived risk of ill-health as a result of STIs while 59 (13.6%) respondents recorded a low perceived risk of ill-health. The mean score for PR was 19.75 which also show that generally, majority of the respondents were aware that STIs could be very dangerous to their health.

During the FGD initial reaction to contracting an STI was elicited. Generally fear was a first reaction amongst others. A discussant specifically responded, “I will shout Ye! Mogbe!” [A Yoruba exclamation]*, while another discussant responded, “At first I will be scared, then I’ll get antibiotics.”

<table>
<thead>
<tr>
<th>Table 5a Perceived Risk (PR) Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean score = 19.75</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>High perceived risk of ill-health</td>
</tr>
<tr>
<td>Low perceived risk of ill-health</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Bivariate analysis (table 5b) revealed a significant positive relationship between treatment options and perceived risk of ill-health. Thus, the higher the level of perceived risk of ill-health of respondents, the more they are likely to seek treatment for STIs. ($r = .318$, $p < .01$). Therefore the alternative hypothesis was accepted.

<table>
<thead>
<tr>
<th>Table 5b Association between treatment options and perceived risk of ill-health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlations</td>
</tr>
<tr>
<td>Treatment options</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Perceived risk of ill-health</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Discussion

Knowledge of STIs

More than half (74.2%) of all respondents had heard of STIs before. This finding is consistent with but higher than that of a study conducted in Northern Nigeria in which 67% of adolescents were aware of STIs (Aliyu, Dahiru, Ladan, Shehu, Abubakar, Oyefabi & Yahaya, 2013), and lower than that of a study conducted in Ado-Ekiti, western Nigeria in which 92.4% of respondents had high awareness of STIs (Amu & Adegun, 2015). These reveal some regional knowledge variations. The discussion also showed some level of knowledge but lacking in depth.
In this study, general knowledge on STIs was quite high. Regarding specific knowledge about STIs, findings were similar to those reported by studies carried out in Tanzania (Tengia-Kessy & Kamugisha, 2006) and Europe (Samkange-Zeeb et al, 2011) in which the most commonly known STI was also HIV.

Majority of the respondents knew that STIs could be transmitted through unprotected sex, sharing of unsterilized sharp objects and blood transfusion. This is in consonance with the reports of various other studies conducted within the country (Amu & Adegun, 2015; Mmari et al, 2010; Aliyu et al, 2013; Kadiri et al, 2014) though these studies focused mainly on HIV/AIDS.

The three most commonly mentioned symptoms of STI were abnormal discharge from penis/vagina, painful urination and weight loss. The least mentioned was body rash. This contrasts with that of a study conducted among youths in North Central Nigeria (Aliyu et al, 2013) in which the most popularly known symptoms of STIs were rash, painful urination, and painful intercourse.

The most common mode of prevention of STIs known by the respondents were condoms, avoiding contact with the blood of an infected person and staying faithful to one sex partner. Majority of the female discussants mentioned hospital check-ups, seminars on STIs, use of “protection” (condoms) as ways of preventing STIs whereas the male discussants mentioned use of condoms, abstinence and marriage as ways of preventing STIs. When asked what interventions would be best in preventing STIs, both groups mentioned health talks and hospital check-ups. This only buttresses the lack of adequate knowledge on issues concerning STIs and some level of gender differences still in existence.

There were equally misconceptions on the modes of prevention as a significant number of respondents incorrectly agreed that avoiding toilets used by infected people could prevent STIs. Misconceptions such as this need to be addressed to avoid stigma. These misconceptions were also repeated by discussants during the focus group discussion. Studies have established that respondents’ knowledge of STIs could be attributed to the widespread publicity and education on HIV/AIDS and not necessarily based on their specific knowledge of other STIs.

Based on other studies and findings from this study, the level of in-depth knowledge on STIs especially the four curable STIs is quite discouraging. These studies have shown that so much attention and publicity has been given to HIV/AIDS, whereas other STIs with serious complications which can also predispose to HIV/AIDS have been ignored. It is important that quality information about these other STIs should be publicised.

**Source of information on STIs**

The major sources of information were television, social media, the internet and school. This result is quite similar with that of a study carried out in South Western Nigeria where the major sources of STI information were the radio, television, teachers, and newspapers (Amu & Adegun, 2015).

The most likely reason why social media and internet were the major sources of information may be due to increased access to smart cell phones which enables them easy access to the internet and social media platforms which in turn gives them continuous access to various kinds of information.

Tertiary institutions are also playing increasing roles in the dissemination of information about STIs through health workers which could be internal or external, sign boards that convey information on STIs especially HIV/AIDS and some student groups/fellowships who take it upon themselves to educate their peers on STIs. Discussions also revealed mixed sources of information such as non-focused doctor’s appointment and church meetings. Although not synchronised, these indicate increased efforts by other sectors.

There were also differences in males and females responses regarding the existence of educational programs on STIs. Male participants agreed to have had one organised by a certain named group JCI (actual meaning wasn’t known at the time of discussion), while the
females were not aware of any such programs have existed before. Both groups however felt information on STIs was of importance due to low level of in-depth knowledge and high occurrence of co-habitation and HIV prevalence following random check-ups in that population

Health seeking behaviour

Very few respondents admitted to have contracted an STI before. All respondents who had contracted STIs sought at least one form of treatment with the majority seeking treatment from private hospitals. This finding contrasts with reports from a study carried out in South Africa were youths preferred to seek treatment in general hospitals compared to private ones (Otawme et al 2015). The least place the respondents sought treatment was in traditional clinics. This also contrast with some studies carried out in western Nigeria where the reports show that youths preferred to seek treatment in traditional clinics or with herb dealers as a result of shame. They also preferred traditional clinics and herb dealers because of the privacy rendered in their services and reduced chances of running into someone familiar.

One of the challenges of this study is that very few participants admitted that they had contracted STIs at a particular point in their lives. No female discussant admitted to have contracted an STI before or admitted to knowing someone who had contracted a STI. Only one male discussant admitted to have contracted an STI at some point in his life. A study found gender differences in health seeking behaviour. Females had lower odds (odds ratio 0.6) than males of seeking treatment for STIs (Mmari et al). Few of the male discussants expressed that they had some friends who had been infected with STIs. Majority of the discussants both male and female mentioned that they would combine traditional medications with orthodox medications. Up to 80% of the Nigerian population still make use of traditional medicines (Ekeanyanwu, 2011). Therefore it is not surprising that some youths would also make use of this channel of care.

The participants generally agreed that most young adults with STIs symptoms sought care from government hospitals, private hospitals, self-medications or traditional healers/herbalists. Some of the medications mentioned by the participants were: Jedi, Alabukun, Bicham, Kedy, Dr Oroki, Yemkem, Yoyo bitters, Bitter leaf juice mixed with ogogoro (dry gin) and some GNLD products. This finding corroborates an earlier study where same treatment sites were suggested. (Adededimeji, 2005)

Factors influencing health seeking behaviour

Majority of the respondents in this study would be motivated to seek treatment if cost of treatment is low. High cost of treatment was a major discouraging factor from seeking treatment. This finding agrees with the report from a study carried out in Kwara State, Nigeria (Kadiri et al, 2014) where the high cost of treatment in some hospitals was noted as a major factor contributing to youths accessing road side pharmacies and herbs.

Also, the attitude of health workers was a major factor affecting health seeking behaviour. Various studies have shown that young people have zero tolerance for any form of stigmatisation from health workers.

Religious reasons were the least option that could either encourage or discourage respondents from seeking treatment. Very few studies mention religion as a source of treatment or factor in health seeking behaviour, however a study carried out in North Central Nigeria reports that an informant had to resort to prayers when STI symptoms were deteriorating (Kadiri et al, 2014).

Disclosure of status

Majority of the respondents in this study would feel free to discuss with someone if they had an STI. Health workers were the best people they would discuss their status with followed by parents and pharmacists. This finding is slightly consistent with reports from a study carried out in Western Nigeria in which majority of the female participants would rather
discuss their STI status with their mothers and female siblings. The least people they would discuss their status with were teachers and herbalists. This slightly contrasts with findings from the focus group discussions in which most female participants would rather not discuss their status with anyone or at most a health worker.

There were also slight gender differences in the disclosure of status. Most guys agreed they can talk to their friends about STIs and they also agreed that the least people they will speak to about STIs were their parents. Adedimeji, 2002 had earlier reported similar findings. Infection with an STI was reported by 27% of boys and 10% of girls and as much as 49% of participants reported knowing a young person infected with an STI.

**Perceived risk of ill-health as a result of STIs**

Most respondents recorded a high level perceived risk of ill-health as a result of STIs which shows that generally, majority of the respondents were aware that leaving STIs unattended for a long time or ignoring it totally could be very dangerous to their health and that of their partner.

Most participants did not show any special preference for a particular source of care as a result of their initial perception/reaction to symptoms. There were mixed reactions regarding sexual behaviour following the discovery of an STI. Half of the participants would stop having sex till they get treated for STIs, while the other half reported that they will keep having sex but with contraceptives most preferably condoms.

**Conclusion**

Youth in this tertiary institution have fair health seeking behaviour and applaudable knowledge about STIs but lacking in depth. There are gender differences in health seeking behaviour. Perceived risk of ill health following STI was high. Misconceptions still exist. Many still have disclosure difficulty. Young adulthood is a time of wild experimentation and a peak for information sharing especially in the modern technological world. Given the right information and channels for learning, positive behaviour change can be attained to protect the youth.

**Recommendations**

There is a need to establish a heart-to-heart youth friendly counselling and support center where students can freely walk in to discuss issues pertaining to health and sexuality. Furthermore, the workers in the health center should be adequately equipped to provide confidential and friendly services for STI treatment and counselling.

There’s a need to intensify efforts to promoting knowledge on STIs among students by conducting periodic seminars and compulsory comprehensive sexuality education classes that will educate students on the dangers of risky sexual behaviors and STIs.

Frequent media features around STIs and youth sexuality need to be made on the internet and social media. These can serve as powerful channels for providing factual and scientific information on STIs for young people.

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[19.] World Health Organization Media Centre, Sexually Transmitted Infections, 2015


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