EDITORIAL POLICY

Papers must be submitted with the understanding that they have not been published elsewhere (except in the form of an abstract or as part of a published lecture, review, or thesis) and are not currently under consideration by another journal published or any other publisher. The submitting (Corresponding) author is responsible for ensuring that the article’s publication has been approved by all the other coauthors. It is also the authors’ responsibility to ensure that the articles coming from a particular institution are submitted with the approval of the necessary institution. Only an acknowledgment from the editorial office officially establishes the date of receipt. It is a condition for submission of a paper that the authors permit editing of the paper for readability. All enquiries concerning the publication of accepted papers should be addressed to ejournal.assist@tau.edu.gy.

PEER REVIEWERS

Dr. Jefferson Garcia Guerrero, Assistant Professor, Al Ghad International College for Applied Medical.

Dr. Arnel Banaga Salgado, Ass. Professor – RAK Medical & Health Sciences University, Ras Al Khaimah, UAE.

Dr. Manasa Trinath, Assistant Professor, Department of Nursing, King Khalid University.
EDITORIAL POLICY

Papers must be submitted with the understanding that they have not been published elsewhere (except in the form of an abstract or as part of a published lecture, review, or thesis) and are not currently under consideration by another journal published or any other publisher. The submitting (Corresponding) author is responsible for ensuring that the article’s publication has been approved by all the other coauthors. It is also the authors’ responsibility to ensure that the articles coming from a particular institution are submitted with the approval of the necessary institution. Only an acknowledgment from the editorial office officially establishes the date of receipt. It is a condition for submission of a paper that the authors permit editing of the paper for readability. All enquiries concerning the publication of accepted papers should be addressed to ejournal.assist@tau.edu.gy.

PEER REVIEWERS

Dr. Jefferson Garcia Guerrero, Assistant Professor, Al Ghad International College for Applied Medical.

Dr. Arnel Banaga Salgado, Ass. Professor – RAK Medical & Health Sciences University, Ras Al Khaimah, UAE.
ABOUT PLAGIARISM

Plagiarism is the use or close imitation of the language and ideas of another author and representation of them as one’s own original work. Duplicate publication, sometimes called self plagiarism, occurs when an author reuses substantial parts of his or her own published work without providing the appropriate references. This can range from getting an identical paper published in multiple journals, where authors add small amounts of new data to a previous paper.

Plagiarism can be said to have clearly occurred when large chunks of text have been cut and pasted. Such manuscripts would not be considered for publication in TIJN Journal. But minor plagiarism without dishonest intent is relatively frequent, for example when an author reuses parts of an introduction from an earlier paper. The editors will judge any case of which they become aware (either by their own knowledge of and reading about the literature, or when alerted by referees) on its own merits.

The paper containing the plagiarism will be obviously returned back to the author’s for review, but we earnestly request the authors to avoid submitting plagiarized.
DISCLAIMER

Texila International Journal of Nursing (TIJN) make every effort to ensure the accuracy of all the information (the “Content”) contained in its publications. However, the TIJN and its agents make no representations or warranties whatsoever as to the accuracy, completeness or suitability for any purpose of the Content and disclaim all such representations and warranties whether express or implied to the maximum extent permitted by law. Any views expressed in this publication are the views of the authors and are not necessarily the views of the Editor’s or Texila International Journal of Nursing.
## TABLE OF CONTENT

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessment of Menorrhagia Associated with Intra-Uterine Contraceptive Device (Cut 380a) Among Women Attending Idi-Ogunun Primary Health Care Centre, Ibadan North Local Government Area of Oyo State</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Dauda Rifkatu Samaila</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Analysis of the Changing Role of Traditional Birth Attendants in Yirol West County, South Sudan</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Nebiyu Lera Alaro</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Knowledge of Diabetic Foot Care among Nursing Practitioners in Rivers State, Nigeria</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Lilly-West B. R</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Prevalence of Acute and Moderate Malnutrition among Under Five Children in Three Counties of Western Lakes State, South Sudan</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Nebiyu Lera Alaro</td>
<td></td>
</tr>
</tbody>
</table>
Assessment of Menorrhagia Associated with Intra-Uterine Contraceptive Device (Cut 380a) Among Women Attending Idi-Ogunsun Primary Health Care Centre, Ibadan North Local Government Area of Oyo State

Article by Dauda Rofikun Samaila
*Nursing, Texila American university, Nigeria*
*E-mail: rifkatudaudasamaila@yahoo.com*

Introduction

Background of the study

There is global use of IUD among women. It is seen as the safest and reversible family planning method compared to other methods. It is a wise choice for women within the sexual active period of life that are yet to commence or complete the number of children so desired and to also prevent unwanted pregnancy and the consequences of abortion. For the married couples yet to complete number of children desired it serves as a form of child spacing method of choice with high level reliability.

Despite its safety and reversibility, it uses in developing country like America is low, estimated at 2% in 2002 (Mosher, 2004). Based on 2004 United Nations data, Eastern and Western Europe represent 4-5% of global IUD use. The reason for this low practice may be associated with its possible side effects like menorrhagia. However, WHO estimates that approximately 160 million women worldwide use IUDs today. China has an estimated two-thirds of these users, or 96 million. Only a small percentage of current users are in Eastern or Western Europe or other industrialized countries (10%). The remaining 24% are in developing countries other than China, concentrated in Vietnam, Egypt, Indonesia, India, and Uzbekistan, and Turkey – those six countries alone contain half of all users in developing countries excluding China. All developing countries fall into the following clusters, which show widely different determinants of use rates. They also help to identify programmatic reasons for greater or lesser uptake, (WHO, 2007).

In Nigeria according to Dinwoke V, Okafor C, Eke A, (2015) in a study conducted in an Eastern Nigerian Teaching Hospital “the IUD was the most popular, being accepted by 56.7% of all clients” of all family methods. This was attributed to some women believe that using modern methods would endanger their health and future fertility. This concede with a study carried out in Port Harcourt, south-south Nigeriaby Enyindah C, Ojule J, Bassey G, indicating IUCD users in the range of 47 to 66% of contraceptive acceptors in different family planning centers and it is used longer than other reversible contraceptive methods.

Though it is the safest reversible family planning method studies have associated it with the leading cause of menorrhagia among family planning user as shown in this study compared to other complications in Eastern Nigeria Teaching Hospital in which “No complication 83% 275, Menorrhagia/ irregular bleeding 23%, Abnormal vaginal discharges 4.55% , Missing 0.61%, Others-nonspecific 3.64% and Failure 0% agreeing with the study in South-south Nigeria of Port Harcourt as follows Menorrhagia/ irregular bleeding 30.3%, Amenorrhrea 14% , Hypomenorrhea 2.0%, Dysmenorrhea 20.6%, Missing 5.3%, Expulsion 2.7%, Coital discomfort 2.4% ,Coital bleeding 0.6%, Accidental pregnancy 0.3%, Vaginal discharge 20.8%, Lower abdominal pain18.7% and PID 1.5%.

However, the investigator is so concern with the association of IUD and menorrhagia. Therefore, the study aim to assess the menorrhagia associated with intra-uterine contraceptive device (Cut 380A) among women attending Idi-Ogunsun Primary Health Care Centre, Ibadan North Local Government Area of Oyo State, Nigeria.

Methods

Study site

Idi Ogungun PHC is located in Ibadan North LGA, Ibadan, Oyo state, Nigeria. Ibadan North is bounded by Akinyele Local Government in the north, by Ibadan North East and Lagelu Local
Governments in the East. In the West, by Ido Local Government, Ibadan South West and Ibadan South East Local Government Area. Ibadan North LGA is multi-ethnic and is dominated by the Yoruba, the Igbo, Edo, Urobo, Isekiiri, Ijaw, Hausa, Fulani and some foreigners who are from Europe, America, Asia and other parts of the world are also resident in the LGA. The Local Government Area has a population of 308, 119 people. This comprises of 152, 608 males and 155, 511 females (Federal Republic of Nigeria Printers, 2009).

Ibadan North Local Government Area is divided into twelve wards. The LGA can be stratified in to three developmental zones based on the characteristics, pattern of evolution and socio-economic status in accordance with the stratification model adapted by Osundare, (1990). However, this has been modified by other researchers as development progresses. These are the inner core, transitional and peripheral zones.

Idi Ogungun heath centre was established as a dispensary but was converted and commissioned as a health centre on the 21st March 1996. It was made up of several units including: Infant Welfare Clinic, Immunization Clinic, Antenatal Clinic, Labour Ward and Post-natal Ward Laboratory (Headed by a Laboratory Technician), Family Planning Clinic headed by a Public Health Nurse, Tuberculosis DOTS (Tuberculosis Dispensary Unit).

The health centre rendered 24 hours health services with 4 qualified Nurses (Public Health Nurses), 3 Community Health Officers, 6 Community Health Extension Workers, 3 Health Assistants, 1 Medical Record officer, Technician etc. Numbers of patient patronizing the health centre are 300-400 per week and 1000 patients monthly. All services are rendered on out-patient basis except labour cases which are handled in the labour ward which has an 8 bedded ward. Services on family planning are on out-patient basis. An activity in the family planning unit includes:

1. Counselling (Health Education)
2. Outreach Services
3. Home Visiting
4. Obtaining Clients Consents
5. Administrative and Removal of all Family Planning method including (IUCD, Implants, Injectable, etc.).
6. Treatment of STIs and Counselling of affected Clients
7. Arresting of Bleeding
8. Organizing of workshops, training programmes and seminars

**Study population**

Women patronizing the family planning unit at Idi-Ogungun primary health centre (PHC) Ibadan North LGA, Oyo State, within the study period.

**Study design**

Descriptive, cross-sectional.

**Study period**

September, 2015 to September, 2016

**Sample size determination**

Women patronizing the family planning unit at Idi-Ogungun primary health centre (PHC) Ibadan North LGA, Oyo State, during the period of recruitment were eligible.

**Sampling method**

Purposive sampling technique of non-probability was used to select 100 respondents in the family planning unit of the PHC where permission was granted by nursing department; subsequently, women attending the family planning clinic during the period of recruitment and gave informed consent were enrolled into the study.
Where \( N = \) Total Population
\[
n = \frac{N}{1 + N \times e^2}
\]
\( n = \) Sample size
\[
e = 0.05
\]
\[
n = \frac{230}{1 + 230 \times 0.05^2}
\]
\[
n = \frac{230}{1 + 230 \times 0.025}
\]
\[
n = \frac{230}{1 + 0.55}
\]
\[n = 104.9\]
\[\approx 105\]

**Inclusion criteria**
All women attending the Family planning clinic (FPC), who gave written and informed consent.

**Exclusion criteria**
All women who refused consent, or was ill or absent during the period of recruitment.

**Instrument**
A pre-tested self-administered questionnaire was used to obtain information from the participants on socio-demographic characteristics, assessment of menorrhagia associated with intra-uterine contraceptive device (cut 380a), knowledge on menorrhagia associated with intra-uterine contraceptive device (cut 380a), prevalence of menorrhagia among IUCD user, knowledge of women on the treatment of menorrhagia associated with intra-uterine contraceptive device (cut 380a), causes of menorrhagia associated with intra-uterine contraceptive device (cut 380), perception of menorrhagia among the IUCD users and quality of life of IUCD users

**Rating scale**
Assessment of menorrhagia associated with IUD in the study centre. Utilizing questionnaire designed in English language. Pre-test of the questionnaires was carried out with 5 questionnaires was administered to women attending family planning clinic in UCH Ibadan

**Statement of confidentiality**
All information obtained from this study has been kept confidential and will not be linked to the participants in anyway. They were not assigned any identification numbers neither nor identified by their names.

**Data analysis**
Data was entered and analyzed using SPSS (Statistical Package for Social Science) version 21.0. Descriptive statistics has been used to summarize the data while chi-square was used to test hypothesis. Analysis were done at a 5% level of significance (\( p < 0.05 \)). Data that was collected in this study was statistically analysed using descriptive statistics like frequency distribution, table and simple percentage method and bar charts.
Limitation

This study is limited to women attending family planning clinic at Idi-Ogungun primary health centre.

Time and financial constrain were the major hindrance factor that limit the researcher’s effort, however, high response rate from the respondents is the major strength of the study.

Ethical consideration

Ethical approval was obtained from the OYO State ethical committee and permission given by the Nursing Officer in charged. Verbal informed consent was given by the respondents in order to respect the rights of the study participants to participate or not.

Results

Introduction

This chapter presents the results derived from the data generated through questionnaire administered to the respondents. The data was analyzed using descriptive statistics of frequency counts, percentages and the results presented in tables and charts. Inferential statistics of chi-square test and t-test was used to test the hypothesis formulated at significant level of 0.05.

Section A: Socio demographic information

The socio demographic characteristics indicated, thirty-one (31.0%) of the respondents fall within the 25-29 years age bracket. This group is followed by 35 years and above, 30-34 years and 19-24 years age groups who were 29 (29.0%), 26 (26.0%) and 14 (14.0%) respectively. The distribution of the respondents according to their marital status revealed that 50 (50.0%) of the respondents were married, 35 (35.0%) were single, 9 (9.0%) were separated, 4 (4.0%) were divorced while 2 (2.0%) were widowed.

Christianity was the predominant religion practiced by 54 (54.0%) of the respondents while Muslims were 46 (46.0%) (Table 4.1). Majority of the respondents were traders, representing 34 (34.0%), 23 (23.0%) were artisans, 21 (21.0%) were professionals, 12 (12.0%) were unemployed while 10 (10.0%) were privately employed as shown in table 4.1. Most of the respondents’ husbands 43 (43.0%) had secondary education. 20 (20.0%) had primary and tertiary education respectively while 17 (17.0%) of the respondents’ husband had no formal education as highlighted.

The Yoruba constituted the predominant 64 (64.0%) of the ethnic group followed by the Igbos and other tribes which accounted for 14 (14.0%) respectively while 8 (8.0%) of the respondents were Hausas. Most of the respondents got married within 19-24 age range followed by 33 (33.0%) got married between 25-29 age range and 11 (11.0%) within 30-34 age range while 8 (8.0%) got married above 35 years as highlighted in table 4.1. Most of the respondents 32 (32.0%) had two children, 31 (31.0%) had three children, 21 (21.0%) had above four children while 16 (16.0%) of the respondents had only one child. The result further showed the financial situation of the respondents with 32 (32.0%) of the respondents who had no income, 30 (30.0%) earned between 11,000 and 20,000 naira, 22 (22.0%) earned less than 5,000 naira, 9 (9.0%) earned between 21,000 and 40,000 naira while only 7 (7.0%) of the respondents earned above 40,000 naira.

Assessment of menorrhagia associated with intra uterine contraceptive device

SS seventy-nine (79%) respondents never had menorrhagia at regular interval while 21 (21%) of the respondents had menorrhagia occurring at regular interval.

How long respondents had menorrhagia

Seventy-nine (79%) of the respondents never experienced menorrhagia, 10 (10.0%) experienced it between 8-11 months and above, 6 (6.0%) experienced it between 4-7 months while 5 (5.0%) also experienced menorrhagia for 3 months.
Days between respondents’ menstrual circle

Thirty-two (32%) of the respondents have 26-30 days between each menstrual circle, 30 (30%) have 21-26 days between each menstrual circle, 20 (20.0%) also have 30-35 days between each menstrual circle while 18 (18.0%) of the respondents have 35 days and above between menstrual circle.

How many times respondents changed pads every 24 hours before menorrhagia

Thirty-six (36%) of the respondents changed pads before menorrhagia every 8-9 hours, 34 (34%) changes pad every 6-7 hours, 17 (17%) mentioned every 4 hours while 5 (5%) of the respondents’ changes pad before menorrhagia every 5 hours.

How many times respondents changed pads every 24 hours after menorrhagia

Sixty five (65%) of the respondents changed pads after menorrhagia every 8-9 hours, 15 (15%) changes pad every 10-11 hours, 14 (14%) mentioned every 12 hours while 6 (6%) of the respondents changes pad after menorrhagia every 6-7 hours.

Whether respondents use more than one sanitary pad at the same time

Seven six (76%) of the respondents do not use more than one sanitary pad at the same time, 14 (14%) used tampon and sanitary pad while 10 (10%) of the respondents also used tampon + sanitary 2pads. This is shown in table 4.2.6 above.

Duration of menstruation

Fifty-seven (57%) of the respondents mentioned that they menstruate between 3-7 days, 29 (29%) mentioned 3 days, 10 (10%) mentioned 8-10 days while 4 (4%) of the respondents also mentioned that they menstruate above 10 days.

Respondents’ idea on severity of menstrual bleeding

Revealed 43 (43%) of the respondents who mentioned that menstrual bleeding is moderate, 23 (23%) mentioned mild, 21 (21%) mentioned severe while 13 (13%) also mentioned that menstrual bleeding is very severe.

Respondents’ experience during menstruation

Revealed 77 (77%) and 57 (57%) of the respondents did not get their underwear dirty before and after menorrhagia respectively. Seventy-eight (78%) and 82 (82%) did not get dirty on linen before and after menorrhagia respectively while 88 (88%) and 90 (90%) of the respondents did not get dirty on the furniture before and after menorrhagia.

Whether respondents have dysmenorrhea

Revealed 43 (43%) of the respondents never experience dysmenorrhea, 20 (20%) and 17 (17%) experienced mild, moderate and sever dysmenorrhea before menorrhagia respectively. Thirty (30%) experience moderate dysmenorrhea after menorrhagia while 27 (27%), 25 (25%) and 23 (23%) also experienced mild, severe and no dysmenorrhea after menorrhagia.

The association between menorrhagia and relations

Demonstrated that 53 (53%) of the respondents have a female relation that have had menorrhagia while 56 (56%) of the respondents also have a relation that has had menorrhagia before.

Knowledge on menorrhagia associated with IUCD

Distribution showing whether respondents have heard about family planning

Fifty-six 56 (56%) of the respondents have heard about family planning while 44 (44%) have not heard about family planning.
Whether respondents have heard about menorrhagia

Sixty-four (64%) of the respondents have not heard about menorrhagia before while 36 (36%) have heard about menorrhagia.

Respondent’s source of information

Indicated that 55 (55%) of the respondents heard the information through health workers, 18 (18%) heard about it through television while others 12 (12%), 10 (10%) and 5 (5%) mentioned other source, radio and newspapers respectively.

Knowledge on menorrhagia associated with IUCD

The cumulative result showed that majority of the respondents 57% disagreed to the statement that pelvic inflammatory disease is contraindication to IUCD use, 77% disagreed that dysfunction of the ovaries can result to menorrhagia, 83% disagreed that uterine fibroid can cause menorrhagia while 68% also disagreed that menorrhagia is a well-known side effect of using a nonhormonal IUD. The result further revealed that 56% of the respondents disagreed that pregnancy complications may lead to menorrhagia, 74% disagreed that menorrhagia makes a woman to feel pain, 78% also disagreed that menorrhagia has a negative effect on a woman’s quality of life while 57% of the respondents disagreed that menorrhagia is a heavy cyclical menstrual bleeding over several consecutive cycles.

Prevalence of menorrhagia among IUCD users

Respondents currently using IUCD

Fifty seven (57%) of the respondents are not using IUCD while 43 (43%) of the respondents are using IUCD.

How long respondents have been using IUCD

The question is not applicable to 57 (57%) of the respondents who are not using IUCD. However, 20 (20%) have been using IUCD between 4-6 years, 13 (13%) mentioned 1-3 years while 10 (10%) have been using IUCD for more than 6 years.

Distribution showing whether women in respondents’ community use IUCD

Seventy three (73%) of the respondents mentioned that women in their community do not use IUCD while 27 (27%) of the respondents mentioned that women in their community use IUCD.

Whether respondents noticed bleeding after insertion if IUCD

Sixty seven (67%) respondents did not noticed bleeding after insertion of IUCD while only 33 (33%) of the respondents who uses IUCD noticed bleeding after insertion of IUCD. This is shown in table 4.4.4

What respondents did when they noticed the bleeding?

Thirty four (34%) respondents visited the clinic and 34 (34%) also did nothing when they noticed the bleeding after insertion of IUCD while 32 (32%) of the respondents used herbal concoction.

Duration of bleeding experienced

Fifty (50%) of the respondents had no response to the question, 27 (27%) mentioned that it lasted for a month while 23 (23%) also mentioned that it lasted between 2-3 weeks.

Knowledge of women on the treatment of menorrhagia associated with intra-uterine contraceptive device (cut 380a)

Revealed that 70% of the respondents agreed that essential menorrhagia can be treated medically or surgically. However, 80% disagreed that medical treatments include oral medication and LNG-IUS, 82% disagreed that surgical options includes mini-invasive surgery and hysterectomy while 84% also disagreed that only medical treatments are effective. The result also showed that 88% of the respondents disagreed that surgical treatment is more effective in women, 65% agreed that herbal
treatment is more preferable, 75% also disagreed that there are no treatments for menorrhagia while 65% of the respondents agreed that essential menorrhagia can be treated medically or surgically.

Causes of menorrhagia associated with intrauterine contraceptive device (Cut 380A)

The computed cumulative responses in table 4.6 shows the causes of menorrhagia with 65% respondents who disagreed that sex causes bleeding (menorrhagia), 70% disagreed that excessive intrauterine bleeding at regular intervals due to IUCD is a cause, almost all the respondents 98% agreed that the copper use in intrauterine contraceptive device causes bleeding while 84% also agreed that sexual transmitted diseases cause bleeding.

Effect of intrauterine contraceptive device (Cut 380A) on the users

The cumulative responses in table 4.7 above revealed that 54% and 46% of the respondents experience mild and moderate level of itching while using intrauterine contraceptive device respectively. Thirty nine (39%), 35%, 16% and 10% of the respondents experienced mild, moderate, severe and very severe fainting as a result of bleeding (menorrhagia) respectively. Sixty eight (68%), 15%, 12% and 5% of the respondents experienced moderate, severe, mild and very severe level of dysmenorrheal during bleeding while using IUCD respectively. Forty seven (47%) and 53% also experienced moderate and mild discomfort during bleeding as a result of IUCD. The result also showed 50%, 24%, 16% and 10% of the respondents who experienced moderate, mild, severe and very severe bleeding in the 3 – 6 months of insertion of IUCD. Eighty (80%), 12% and 8% experience moderate, mild and very severe level of peperish sensation while using intrauterine contraceptive device respectively. Seventy eight (78%), 20% and 2% mentioned that the degree of anaemia experience as a result of menorrhagia is mild, moderate and very severe. The result also revealed that 77%, 18% and 5% of the respondents mentioned that the effect of financial implication in management of menorrhagia is mild, moderate and severe respectively. Sixty five (65%), 25% and 5% experienced mild, moderate, severe and very severe level of discomfort experience in association with others during exclusive bleeding (menorrhagia). Forty six (46%), 34%, 15% and 5% also experienced moderate, mild, severe and very severe level of anxiety during excessive bleeding (menorrhagia).

Perception of menorrhagia among IUCD users

The cumulative responses in table 4.8 above revealed that almost all the respondents 95% agreed that their health can withstand menorrhagia, 85% agreed that culture only treats heavy bleeding with herbal medicine, 97% agreed that excessive intrauterine bleeding is normal and can be treated with good hygiene, 90% agreed that excessive uterine bleeding has no cure, 88% also agreed that their religion encourages excessive uterine bleeding for purification while 97% of the respondents agreed that pre and post insertion counselling is important. The result also showed that 90% of the respondent agreed that client feel threatening when device string is felt, 51% agreed that IUD effectively prevents occurrence of pregnancy, 98% also agreed that IUD methods can cause permanent infertility while all the respondents 100% agreed that IUD is a major cause menorrhagia. The result further revealed that 100% respondents agreed that IUD damages the uterus, 51% have experienced heavy bleeding as a result of IUD, and 80% also agreed that IUD is not an effective birth control method while 79% of the respondents agreed that menorrhagia side effect of IUD is discouraging.

Menorrhagia and quality of life perception of menorrhagia among IUCD users

The cumulative responses in table 4.9 above revealed that 57% of the respondents disagreed that menorrhagia improves the quality of life, 77% also disagreed that intake of adequate diet during excessive bleeding improves quality of life while 83% of the respondents disagreed that intake of multivitamin drugs improves quality of life.

Hypotheses testing

Hypothesis1: There is no significant relationship between perception of women and the use of intrauterine contraceptive device
Showing Chi-square of relationship between perception of women and the use of intrauterine contraceptive device

\[ S = \text{Significant} \]

Respondents who had poor perception were likely not to use IUD (P<0.05).

**Decision:** The null hypothesis stated above is hereby rejected since the calculated \( p - \) value is lower than 0.05 (that is 0.079), then it can be concluded that there is significance between perception of the respondents and the use of IUD.

**Hypothesis 2:** There is no significant relationship between level of knowledge of women and treatment of menorrhagia

T-test of significant relationship between level of knowledge of women and treatment of menorrhagia

Respondents who had low knowledge about menorrhagia were likely to have low knowledge about treatment (P<0.05).

**Decision:** The null hypothesis stated above is hereby rejected since the calculated \( p - \) value is lower than 0.05 (that is 0.067), then it can be concluded that there is significance relationship between knowledge of women and treatment of menorrhagia.

**Hypothesis 3:** There is no significant relationship between age of women and the use of IUD

**Relationship between age of women and the use of intrauterine contraceptive device.**

**Significant at 0.05**

As stated in table 4.10.3, respondents who are older were more likely to use IUD (P<.05).

**Decision:** The null hypothesis stated above is rejected since the calculated \( p - \) value is less than 0.05(that is 0.047), then it can be concluded that there is significance relationship between age of women and use of IUD among the respondents.

There is no significant relationship between number of children and knowledge of menorrhagia

**Relationship between number of children and knowledge of menorrhagia, NS = Not significant**

As stated in table 4.10.4, respondents’ number of children are not likely to influence their knowledge about menorrhagia (P>0.05).

**Decision:** The null hypothesis stated above is not rejected since the calculated \( p - \) value is greater than 0.05(that is .632), then it can be concluded that there is no significance between number of children of women and knowledge about menorrhagia.

**Discussion of findings**

Discussions of findings are based on research questions and the extent to which the general objective was met, the implication of the study and makes recommendation and suggestion for further research.

This study focuses on the assessment of the menorrhagia associated with intra-uterine contraceptive device (cut 380a) among women attending Idi-Ogungun Primary Health Care Centre, Ibadan North Local Government Area of Oyo State, Nigeria.

**Socio-demographic characteristics of the respondents**

Majority of the respondent (31%) were within the age bracket of 25-29 years and (29%) were above 35 years. This is in connection to the fact that these age group form part of the reproductive age because most of the women are still child bearing age women. This study equally reveal that majority of respondent (50%) were married, (54%) were Christians, (34%) were traders while majority of the respondents (43%) had secondary education. This is in agreement with a study conducted in Oyo State by Ajibade and Thomas, (2009) on mothers’ interest on the use of IUCD, it revealed that most of the participants were between ages 25-39 years and majority were married. Full housewives, traders and artisans responded mostly to the questionnaire while majority of the participants also had primary and secondary education.

The modal ethnic groups of respondents were Yoruba (64%). This was not unconnected to the study setting. More so the study testifies to the fact that majority of the respondent (32%) had no income and most of the respondents (48%) got married between 19-24 years of age.
Assessment of menorrhagia associated with intra uterine contraceptive device

Majority of the respondent (79%) do not experience menorrhagia at regular interval. Most of the respondents (32%) have 26-30 days between each menstrual circle, (30%) also have 21-26 days between each menstrual circle. Majority of the respondents (65%) changed pads after menorrhagia every 8-9 hours, while (76%) of the respondents do not use more than one sanitary pad at the same. Respondents menstrual bleeding is moderate and mild respectively, most of them never had dysmenorrhea while (77%) and (57%) of the respondents did not get their underwear dirty before and after menorrhagia. However, (53%) and (56%) of the respondents have a female and relation that has had menorrhagia before. This is contrary to the study of Bahamones, (1995) on “Use of IUD among women the Bahamas” he asserted that rates were higher in adolescents (and decreased with increased age), women with heavy menstrual flow, and women with a history of cramping pain (dysmenorrhea), with a 30% chance of repeat expulsion. This study addresses the issue of menstrual disruption in the normally menstruating woman. However, local application and impact of progestin on the endometrium is an important intervention for women who bleed too much due to age related changes of the endometrium or certain benign but problematic pathologic changes.

Knowledge on menorrhagia associated with IUCD

From the analysis of the study majority of the respondents (56%) claimed to have heard of family planning. This study equally reveals that (64%) of the respondents have not heard about menorrhagia, 57% disagreed to the statement that pelvic inflammatory disease is contraindication to IUCD use, 77% disagreed that dysfunction of the ovaries can result to menorrhagia, 83% disagreed that uterine fibroid can cause menorrhagia while 68% also disagreed that menorrhagia is a well-known side effect of using a nonhormonal IUD. The result further revealed that 56% of the respondents disagreed that pregnancy complications may lead to menorrhagia, 74% disagreed that menorrhagia makes a woman to feel pain, 78% also disagreed that menorrhagia has a negative effect on a woman’s quality of life while 57% of the respondents disagreed that menorrhagia is a heavy cyclical menstrual bleeding over several consecutive cycles. From the results in this study, it can be deduced that respondents have low knowledge on menorrhagia associated with IUCD.

This is contrary to the findings of Rees (1987), Garry, (2004) and Shapley (2004). They all stated that menorrhagia affects women’s quality of life and an important health care problem. Rees (1987), Livingstone and Fraser (2002) also asserted that menorrhagia may be the result of systemic or uterine disorder or iatrogenic causes. Systemic disorders include hypothyroidism and hematological disorders such as bleeding diatheses, e.g. von Willebrand’s disease.

Prevalence of menorrhagia among IUCD user

Majority (57%) of the respondents are not using IUCD while other have been using it for 4-6 years, 1-3 years and above 6 years respectively. It also revealed that (33%) of the respondents who uses IUCD noticed bleeding after insertion. Having noticed the bleeding, majority of the respondents (34%) visited the clinic and 34% also did nothing when they noticed the bleeding after insertion, however 32 (32%) of the respondents used herbal concoction. This is in agreement with Hidalgo (2002) who asserted that the impact of suppression on menstrual blood loss in IUD users is notable within the first 2 months of use and sustained. In one single-center follow-up study, 25% of 250 women had irregular spotting as opposed to normal menses at 6 months post insertion, and 44% had amenorrhea. At 24 months, 11% of women continued to have irregular spotting and 50% of women reported amenorrhea. Two large multicenter randomized trials by Bavega (1989) and Sivin (1994) reported an amenorrhea rate of 17% at one year and 30% at 2 years. WHO (2012) also stated that across all of sub-Saharan Africa there is consistently low use: no country exceeds 3%. Causes of low use are apparently multiple: neglect of the method at the policy/program level, poor infrastructures and low clinical capacity, damaging rumors, female prejudices against an intrauterine foreign body, fear of infection or other complications, and either misinformed or reluctant providers. In any case, the universality of the IUD absence is striking compared to other regions.
Knowledge of women on the treatment of menorrhagia associated with intra-uterine contraceptive device (cut 380a)

A summary of the knowledge of women on treatment of menorrhagia was examined and 70% of the respondents agreed that essential menorrhagia can be treated medically or surgically. However, 80% disagreed that medical treatments include oral medication and LNG-IUS, 82% disagreed that surgical options include mini-invasive surgery and hysterectomy while 84% also disagreed that only medical treatments are effective. The result also showed that 88% of the respondents disagreed that surgical treatment is more effective in women, 65% agreed that herbal treatment is more preferable, 75% also disagreed that there are no treatments for menorrhagia while 65% of the respondents agreed that essential menorrhagia can be treated medically or surgically. From the above result, it can be concluded that respondents have low knowledge about treatment of menorrhagia. This is contrary to the study of Vuorma, (2003) and Wheeler et al. (2012) who asserted that essential menorrhagia can be treated medically or surgically. Medical treatments include oral medication and LNG-IUS. Surgical options include mini-invasive surgery (EA) and hysterectomy. The choice of treatment depends on personal choice of the woman, desire for future pregnancy and general health status. In addition, safety, efficacy, cost and availability of different treatment modalities affect which treatment is chosen. Guidelines for treatment of menorrhagia were released in Finland in 2005 (Current Care editorial office 2005, updated 2009), and two years later in the UK. Medical treatment is usually preferred as first-line treatment of menorrhagia by women and professionals according to NICE (2007) and Nelson (2010).

Causes of menorrhagia associated with intrauterine contraceptive device (Cut 380A)

From the analysis, majority 65% respondents disagreed that sex causes bleeding (menorrhagia), 70% disagreed that excessive intrauterine bleeding at regular intervals due to IUCD, almost all the respondents 98% agreed that the copper use in intrauterine contraceptive device causes bleeding while 84% also agreed that sexual transmitted diseases cause bleeding. From the results from this study, it can be concluded that respondents have average knowledge about the causes of menorrhagia. This is in agreement with Harrison-Woolrych (2003) who stated that it is difficult to estimate ease or difficulty of IUD insertion. Until recently most data regarding perforation and expulsion of the IUD were collected in expert centers and were specific to the copper IUDs. With increasing introduction and uptake, new data demonstrate not only the risk of both with the LnG IUD but also the risk of complications associated with the resulting intra-abdominal location, once thought to be of much less concern than with the copper IUDs. However, more like the copper bearing IUDs, the LnG IUD continues to release progestin following perforation and presents a problem.

A recent retrospective study from the Netherlands by Van Houdenhoven, (2006) reported a perforation rate of 2.6/1,000 LnG IUD insertions. Previous studies of uterine perforation related to several of the copper bearing IUDs estimated the incidence of perforation of 1 per 1,000. Risk factors for perforation include the experience of the provider however it seems that perforation is less likely to occur if a withdrawal rather than a push out technique (as is the case with the Mirena LnG IUD) is used.

Effect of intrauterine contraceptive device (Cut 380A) on the users

From the analysis, majority 54% and 46% of the respondents experience mild and moderate level of itching while using intrauterine contraceptive device respectively. Thirty nine (39%) of the respondents experienced mild fainting as a result of bleeding (menorrhagia) respectively. Sixty eight (68%), of the respondents experienced moderate level of dysmenorrheal during bleeding while using IUCD. Forty seven (47%) and 53% also experienced moderate and mild discomfort during bleeding as a result of IUCD. The result also showed 50%, of the respondents who experienced moderate, bleeding in the 3 – 6 months of insertion of IUCD. Eighty (80%), experienced moderate level of peperish sensation while using intrauterine contraceptive device. Seventy eight (78%) mentioned that the degree of anaemia experience as a result of menorrhagia is mild, 77% of the respondents mentioned that the effect of financial implication in management of menorrhagia is mild. Sixty five (65%) experienced mild level of discomfort experience in association with others during exclusive
bleeding (menorrhagia). Forty six (46%) also experienced moderate level of anxiety during excessive bleeding (menorrhagia).

This is in line with Backman (2005) and Lyttinen. (2010) stating that the most frequent adverse effect (around 10-15% of users) is unscheduled erratic menstrual spotting, which usually occurs during the first 3-4 months following LNG-IUS insertion. He also stated that irregular bleeding is the most common adverse effect. Some women experience hormonal side effects, pain and mood changes. An increased incidence of ovarian cysts (10%-20% of users) is reported in women using LNG-IUS. Uterine perforation is a rare complication, but expulsion rates seem to be higher among menorrhagia patients than in the general population of LNG-IUS users.

**Perception of menorrhagia among IUCD users**

Majority of the respondents 95% agreed that their health can withstand menorrhagia, 85% agreed that culture only treats heavy bleeding with herbal medicine, 97% agreed that excessive intrauterine bleeding is normal and can be treated with good hygiene, 90% agreed that excessive uterine bleeding has no cure, 88% also agreed that their religion encourages excessive uterine bleeding for purification while 97% of the respondents agreed that pre and post insertion counselling is important. The result also showed that 90% of the respondent agreed that client feel threatening when device string is felt, 51% agreed that IUD effectively prevents occurrence of pregnancy, 98% also agreed that IUD methods can cause permanent infertility while all the respondents 100% agreed that IUD is a major cause menorrhagia. The result further revealed that 100% respondents agreed that IUD damages the uterus, 51% have experienced heavy bleeding as a result of IUD, and 80% also agreed that IUD is not an effective birth control method while 79% of the respondents agreed that menorrhagia side effect of IUD is discouraging. From this result, it can be concluded that respondents have poor perception. This is in agreement with Brandsborg (2008) who asserted that the mechanisms of chronic postoperative pain are poorly understood, but nerve damage during surgery or a continuous inflammatory response, or both, may lead to an altered pain perception. He also stated that perception of menorrhagia is subjective and management usually depends upon what symptoms are acceptable to an individual. However, Kuh and Stirling (1995) agreed that some cultural influences have been found to determine whether or not a woman will seek medical care for menorrhagia, including her status in the society.

**Quality of life among IUCD**

Majority of the respondents 57% disagreed that menorrhagia improves the quality of life, 77% also disagreed that intake of adequate diet during excessive bleeding improves quality of life while 83% of the respondents disagreed that intake of multivitamin drugs improves quality of life. This is in line with Shapley (2004) who asserted that menorrhagia affects women’s quality of life and an important health care problem. Coulter et al. (1994) also corroborates the study stating that menorrhagia markedly interferes with daily activities and impairs the quality of life (QoL) of affected women.

**There is no significant relationship between perception of women and the use of intrauterine contraceptive device**

This study shows that there’s significant difference between perception of women and the use of intrauterine contraceptive device. This was rejected. This is in consonance with the study of WHO (2012) which states that across all of sub-Saharan Africa there is consistently low use: no country exceeds 3%. Causes of low use are apparently multiple: neglect of the method at the policy/program level, poor infrastructures and low clinical capacity, poor perception, damaging rumors, female prejudices against an intrauterine foreign body, fear of infection or other complications, and either misinformed or reluctant providers.

**There is no significant relationship between level of knowledge of women and treatment of menorrhagia**

Respondents who had low knowledge about menorrhagia were likely to have low knowledge about treatment. This result showed that there is significance relationship between knowledge of women and treatment of menorrhagia and so the null hypothesis stated above is rejected since the calculated P
value is less than 0.05 (P<0.05). This is line with Fraser (2002) who stated that low knowledge about menorrhagia may affect the response to treatment.

**There is no significant relationship between age of women and the use of IUD**

Respondent who are older were more likely to use IUD. The null hypothesis stated above is rejected since the calculated p - value is less than 0.05(that is 0.047). This is in consonance with the WHO (2012), stating that few countries exceed 4% using IUDs, including the highly populated countries of India, Bangladesh, and Pakistan. The reasons differ greatly and it’s associated to low clinical capacity, age and ignorance. Broadly, adoption rates are very low. Therefore there is significance relationship between age of women and use of IUD among the respondents

**There is no significant relationship between number of children and knowledge of menorrhagia**

Children are not like to influence their knowledge about menorrhagia with a P value of 0.632 which is greater than 0.05. This null hypothesis is not rejected. This is agreement with Adekunle and Adaeeze (2013) in a study on family planning and knowledge of child bearing age women which stated that number of children of mothers had no significant influence on mothers; knowledge on menorrhagia.

**Summary**

This study was carried out at Idi-Ogunun primary health centre Ibadan North LGA, Oyo State. 100 questionnaires were administered. Using a structured questionnaire on the assessment of menorrhagia associated with intra-uterine contraceptive device (cut 380a), the study reveals that the respondent has poor knowledge about menorrhagia associated with intra-uterine contraceptive device (cut 380a), there was poor knowledge on the treatment and poor perception on the use of IUCD. However, necessary step need to be taken to implement programs that educate mothers on these poor knowledge

More so education and sensitization programmes would assist immensely in reducing the rate of mortality as a result of inappropriate attention to women’s health.

**Recommendations**

Based on the findings of the study the following recommendations were suggested;

- Mothers should be educated more on the poor perception on the use of IUCD for family planning
- Sensitization campaign should be organized by health workers to equipped mother in their community with adequate information on menorrhagia
- Government at the local, state and federal level should make necessary provisions that will increase the well-being of mothers in Nigeria
- Policy makers should create a law that will make family planning services available free of charge for all women of reproductive age in Nigeria.
- Mass mobilization of the public on the causes and effect of menorrhagia among mothers.
- Governments at local and state level should partner to create more awareness at the grass root, and the partnership should involve faith based organizations and traditional leaders.

**Conclusion**

According to the findings of this study utilizing Idi-Ogunun primary health centre Ibadan North LGA, Oyo State, most women have low knowledge and poor perception towards menorrhagia and use of IUCD. It can also be said that lack of proper interventions by health care centres and family planning providers contributed to the low knowledge and poor perception among mothers at Idi-Ogunun primary health centre Ibadan North LGA, Oyo State.

Hence, low knowledge and poor perception coupled with low knowledge on the causes and effects of menorrhagia may result to increased death rates among mothers in this community. In conclusion result of this present study connotes that women were not knowledgeable about menorrhagia. Therefore health care providers should establish a programme that will keep mothers informed about their health and how they can prevent certain diseases.
Reference


Analysis of the Changing Role of Traditional Birth Attendants in Tirol West County, South Sudan

Article by Nebyu Lera Alaro
Phd., Nursing, Texila American University, Guyana
E-mail: nebyulera@gmail.com

Abstract

Effective from May 2014, community-based traditional birth attendants (TBAs) in Yirol West County, South Sudan, were directed to start referring all women in labour to health facilities for childbirth instead of assisting them in the villages. This study aimed to understand the degree of integration of TBAs health system, to reveal the factors influencing the integration, and to explore the perceived solutions to the challenges faced by TBAs. A qualitative study utilising 11 focus group discussions with TBAs, 6 focus group discussions with women, and 18 key informant interviews with members of village health committees, staff of health facilities, and staff of the County Health Department was conducted. Data were analysed using qualitative content analysis. The study found that many TBAs were referring women to health facilities for delivery, but some were still attending to deliveries at home. Facilitators of the adoption of the new role by TBAs were: acceptance of the new TBAs’ role by the community, women and TBAs, perceptions about institutional childbirth and risks of home childbirth, personal commitment and motivation by some communication problems between TBAs and health care facilities, delays in seeking care by women, insecurity, lack of materials and supplies for TBAs, health system constraints, insufficient incentives for long distances to health facilities and transportation problems. This study has revealed encouraging developments in TBAs’ integration in the formal health system in Yirol West. However, there is need to address the challenges faced by TBAs in assuming their new role in order to sustain the integration.

Keyword: TBAs Health system, TBAs In South Sudan, TBAs in Yirol, Focused antenatal care, Care of uncomplicated delivery, Emergency Obstetric and Newborn Care (HemOnc), Focused postnatal care.

Abbreviations

ANC Antenatal care
ARV Antiretroviral
AVD Assisted vaginal delivery
BEmOnc Basic emergency obstetrics and newborn care
CBR Crude birth rate
CEmOnc Comprehensive emergency obstetrics and newborn care
CFR Case fatality rate
CHC Community health centre
CHD County Health Department
CHO Community health officer
CHP Community Health Post
COMAHS College of Medicine and Allied Health Sciences
C-Section Caesarean Section
CSMMMR Child Survival and Maternal Mortality Reduction
CSSD Central Stores and Sterilization Department
DHS Demographic and Health Survey
EmOnc Emergency obstetric & newborn care
ER Emergency room
FGD Focus group discussion
HAART Highly active antiretroviral therapy
IMR Infant mortality rate
IPT  Intermittent preventive treatment
LBW  Low birth weight
MCH Aides  Maternal and child health aides
MCHP  Maternal and Child Health Post
MDG  Millennium Development Goals
MICS  Multiple Indicator Cluster Survey
MMR  Maternal mortality ratio
MoHS  Ministry of Health and Sanitation
MRP  Manual removal of placenta
MVA  Manual vacuum aspiration
NGO  Nongovernmental organization
OR  Operating rooms
PHC  Primary Health Care
PHU  Peripheral Health Unit
PMTCT  Prevention of mother to child transmission
PNC  Postnatal care
PPH  Post partum haemorrhage
TBA  Traditional birth attendant
TFR  Total fertility rate
UNFPA  United Nations Population Fund
UNICEF  United Nations Children Fund
WHO  World Health Organization

Introduction

In the year 2000, the world's nations pledged to reduce the maternal mortality ratio (MMR) by 75% as the fifth-millennium development goal and ensure universal access to reproductive health by 2015 (ref). Overall, the achievement of this goal has been unequal and many countries, especially in sub-Saharan Africa, are unlikely to reach their targets. By 2014, respect to 1990 baseline, maternal mortality ratio had declined by only 45 per cent globally and by 49 per cent in sub-Saharan Africa[1]. In 2013, WHO estimated that 289,000 women lose their lives during pregnancy and childbirth every year [1], of which 179,000 (62%) in sub-Saharan African countries.

In developing countries, especially in communities with poor access to health facilities and an insufficient number of skilled health personnel, many births take place at home under the supervision of traditional birth attendants (TBAs). South Sudan has one of the world’s lowest levels of access to maternal health services due to a fragile health system and a combination of socio-cultural, economical political factors. Due to lack of qualified staffs, TBAs have been providing maternal health services both at lower level health facilities [primary health care centers (PHCCs) and primary health care units (PHCUs)] and at home. In Tirol West County, since May 2014, home delivery by TBAs was banned and TBAs started receiving incentives to refer women to health facilities for delivery. So far, routine health data show an increasing trend in institutional delivery.

The objective of this study is to explore whether the current model of TBA integration into the health system is effective in promoting access to and utilization of maternal health services and how this integration is perceived by the TBAs, pregnant women, health personnel and the community. The study will collect primary data utilizing two qualitative methods: Focus Group Discussions (FGDs) with TBAs and mothers, and Key Informant Interviews (KIIs) with village health committee members, skilled health workers and County Health Department staff.

South Sudan has the highest maternal mortality rate in the world, at 2,045 per 100,000 live births, according to the World Health Organization (WHO).

Qualitative data from FGDs and KIIIs will be analyzed using thematic and content analysis approach. Data handling and coding will be performed using NVivo software.

The indicator of maternal mortality is the most difficult to improve when compared to neonatal, infant and child mortality. Reduction in MMR requires high coverage of quality services for childbirth-impossible, for instance, where there is a shortage of qualified personnel- an efficient
referral system and conductive political, economic and socio-cultural context. The 3 delays model, often used to describe barriers in access to maternal health services, captures all these aspect and their relationship [3].

In the 1970s, the international response to maternal mortality purposely included traditional birth attendants (TBAs). Although TBAs working in well-structured contexts have helped to save the lives of many mothers and their children [2], they have failed in adequately address obstetric complications because of lack of equipment and specific knowledge. After twenty years, and with evidence that investing in the training of TBAs does not affect MMR, ensuring the presence at the delivery time of skilled birth attendants (SBAs) became the key strategy to reduce maternal mortality in developing countries, as they are those in conditions to manage obstetric complications, which might unpredictably arise. However, twenty years of this latter approach have not led to the achievement of maternal health targets in many countries because of various challenges including personnel shortages and persistent financial, geographic, logistic and socio-cultural barriers.

Lack of universal skilled birth attendance at delivery is linked to qualified staff shortages and to the obstacles mothers are encountering in reaching the services offering SBA delivery. [4, 5]. Although there has been 66% worldwide increase in skilled delivery assistance [6], each year 45 million women still deliver without skilled attendance, two thirds being attended just by TBAs [7]. TBAs continue to attend to women during delivery in areas where SBAs are scarce, when services are not easy to access, when the health services demand is affected by socio and cultural factors [8, 9]. The disconnection between TBAs, SBAs and the health system as a whole has a negative impact on access to maternal health services [10].

Integration of TBAs in the health system

Integration of TBAs into the health system is driven by necessity because they are the main providers of child delivery care in most rural areas where SBAs are scarce. Successful integration of TBAs into the health system requires supervision and continuous refreshment of their knowledge and skills and a strengthen link between them and the health care units they have to refer women to. It must be taken into account TBAs integration consist in them to play an important part in raising women awareness on safe motherhood, including the importance of SBA delivery, and in referring them to health facilities for ANC, PNC and delivery. The directly provided assistance to a woman giving birth should gradually become a last resort initiative, due to exceptional circumstances and even in this case the TBA should be ready to timely identify any risk signal and to immediately refer. Not all TBAs should be considered for integration, only those meeting certain criteria, as the willing to change their role as described above and according to the guidelines of the Ministry of Health and the recognition and endorsement of their activities by the communities they are living in.

Integration of TBAs into the health formal health systems is expected to increase skilled birth attendance [11]. Studies have shown that training of TBAs as promoters of institutional delivery, coupled with continuous supervision and monitoring of their activities leads to a rapid rise of this indicator [12]. Studies in Bangladesh showed that supervision of TBAs by SBAs led to a sudden increase in skilled deliveries [13]. Other studies have found that creating link between TBAs and staff in the units, especially SBAs, increased skilled deliveries from 37% to 95% [14] and from 5% to 48.7% [15]. However, some studies, such as the one by Lynch and Derveeuw [16], have found that training and supervision of TBAs does not increase skilled deliveries. A multinational study on the use of pictorial home based maternal records by TBAs reported mixed results [17]; referral of cases increased in the Philippines from 51% to 94%, but showed little or no improvement in Zambia, Senegal, and Pakistan. This seems to suggest the impact of TBAs integration on access to SBA delivery may change according to the context and its peculiar factors.

A four-year qualitative research was done in Somaliland to establish the consequences of the changed roles of TBAs in a rural area, where they were trained as health promoters and birth companions. The TBAs were linked to Maternal and Child Health Care Facilities (MCHCFs) and for every pregnant woman in labor referred or escorted to the unit they were receiving an incentive equivalent to 5$. The result was five times increase of safe deliveries in the units compared to the baseline [18].
Research has shown that TBAs training may improve their maternal health related knowledge, attitude and behaviors and lead to better pregnancy outcomes [19]. However, the link between TBAs training and improved referral of women with obstetric complications is still uncertain as the quality of studies that have assessed this outcome is weak [16]. A recent Cochrane review concluded that the potential of TBAs training to reduce peri-neonatal mortality is promising when combined with improved health services [2]. There is now a renewed interest in the role of the TBA, especially in links with the SBA services, so that they become promoters of safe childbirth within health units.

Review studies have shown that inclusion of TBAs in multi-sectoral initiatives of community mobilization and awareness can achieve good results [20]. The role of the community is essential in increasing the number of SBAs. Studies have shown that an increase in the quality of care alone is not sufficient to significantly increase the demand for maternal health services. A large scale study done in Bangladesh [28], showed that by increasing the quality of care, there was an increase in SBA at delivery from only 7.2% to 12.5%. But if this is combined with involvement of TBAs, SBA increase from 2.4% to 20.5%. Gabrysch et al. [14], and Skinner and Rathavy [21] have shown that involving the community in maternal health care can yield good results. There are different forms of involvement including education groups [22], health education sessions held together by TBAs and midwife [23], health committees that make promotion of safe childbirth in the community[13-16], monthly meetings [15, 17, 24-26] and mobilization through family groups and women groups [27].

Context

South Sudan has the highest maternal mortality ratio in the world: 2054 deaths per 100,000 live births [29]. This is likely to be the result of a complex group of factors, including geographic and logistic constraints to access, made even more concerning by the adverse environmental conditions (long distances without any road other than rough path ways which become unpassable during the raining season), direct and indirect costs, socio and cultural barriers to utilization of maternal services (which are not familiar for a mainly nomadic population) and poor availability of quality health services due to the generally fragile health system.

South Sudan Government is aware of such situation and it has taken seriously the need of inverting it, including maternal and U5 mortality reduction amongst the objective of South Sudan Development Plan 2011-2013. Coherently, the Ministry of Health has elaborated the Health Sector Development Plan 2012-2016, whose goal is to “Contribute to the reduction of maternal and infant mortality and improve the overall health status as well as the quality of life of the South Sudanese population.” The cornerstone of the HSDP is the Basic Package of Health Services (BPHS), which contains a set of high impact interventions aimed at reducing the leading causes of morbidity and mortality. The HSDP emphasizes the importance of adequate human resources for health and improved accessibility of the health service by the population, and community empowerment through health education.

The BPHS, besides illustrating the intervention to be carried on at different level of the health system, lists all the human and material resources required at this scope. For what concerns TBAs, it recognizes they may still play an important part while waiting for qualified SBAs being trained and enrolled but clearly states that they will be gradually phase out, being replaced by other low and middle level cadre (as Mother and Child Health Workers and Community Midwife), having anyway a more consistent preparation. Their role is limited to “counseling for the promotion of preventive reproductive and obstetric health service, […] prompt identification and referral of obstetric complications” and their involvement in delivery assistance is foreseen just in case of “abrupt labor on transfer”.

Currently South Sudan is still in the process of training qualified SBAs; the choice of terminating Community and Enrolled Midwife courses, focusing on the one for Registered Midwife implies longer time to reach an adequate number of high level cadres and therefore maternal services keep being run by the lower profiles, including TBAs, who are operating in the communities but at Health Facilities level as well (especially in Primary Health Care Units and Centres, but also in Hospitals). The first version of the Harmonized Salary Scale the Ministry of Health introduced for the health personnel (July 2013) included the TBA profile as part of PHCU team, while this was not there in the second (being a TBA considered a simple support staff, if not formally trained for 9 months).
Tirol West, Lakes State, is one of the counties with big challenges in health service delivery. The main ethnic group is Dinka (internally divided in different clans, as Atuot, Ciec, Jier); a semi-nomadic population relying on pastoral activities, whose 48.9% of the population lives under the poverty line. The vaccination coverage of children under one is 22%, and the under-5 mortality is more than 250/1,000. The percentage of deliveries assisted by skilled personnel increased from 6% in 2010 to 23% in 2013 and now stands at 26%. This remarkable improvement, however, is entirely depending on Tirol County Hospital and St Immaculate Mapourdit Hospital, as no qualified midwives (or other cadre as Clinical Officers or Nurses) are operating in the PHC facilities. Tirol County Hospital can count on three Medical Doctors (all international staff) and 6 midwives (5 national) for an estimated catchment population of 301,633 people in the Greater Tirol area which consists of three counties: Tirol West 142,701, Tirol East 95,810 and Awerial 63,122. This implies that there is one midwife per 2,513 expectant pregnant women.

Since 2011, Doctors with Africa CUAMM, hereafter referred to as CUAMM, an Italian non-governmental organization (NGO), is supporting the government owned hospital of Tirol West County, specifically targeting mothers and children. Important steps have been moved in terms of increased access and utilization, however wide gaps still exist [30]. In 2014, Tirol Hospital was able to capture and assist the 34% of expected Major Direct Obstetric Complications in Tirol West County and to register a further increment in the number of assister deliveries (passed from 344 in 2008 to 1461 in 2014). However the drop out between mothers attending ANC services and those choosing to deliver in the Hospital remains concerning; in 2014 there were 4582 ANC first visits (80% coverage), but only 1461 hospital based deliveries (26% coverage). Considerable also the crop out respect to ANC 4th visit, whose coverage reached only the 34%.

ANC 1st visits in PHCCs/PHCU’s in 2010 was around 2%, following introduction of an outreach program from the county hospital, this figure increased to 23%, while ANC 4 coverage rose to 11%. After the recruitment of TBAs in peripheral health units in February 2014, the coverage of ANC 1 reached 61%. In the period January to August 2015, the coverage of ANC 1 has been 52% and ANC 4 22%.

Since 2012, CUAMM is supporting the County Health Department (CHD) in strengthening county wide primary healthcare services delivery. The intervention started with the implementation of an integrated outreaches plan, carried on by a mobile team composed of Tirol County Hospital staff and covering the most remote areas with the provision of EPI, ANC, consultation and health education. In the following years, CUAMM has focused on the poorly operating health facilities; at present, 12 of them have been reactivated through infrastructure renovation, equipment and supplies provision and staff hiring, training, supervision.

Concerning the staff, the main problem to deal with is the absolute lack of skilled health personnel in peripheral health units. Thus, TBAs, known to be very active in the community, have been employed to fill the human resource gaps at PHCCs/PHCU’s. Despite being unqualified staff, they have continued to yield good results, thanks to an effective combination of on job (in PHC facility and at Tirol County Hospital) and formal trainings and supervision, including the promotion of the use of national standardized clinical guidelines.

Additionally, with effect from May 2014, community based TBAs were asked to stop home delivery and later offered an incentive for each woman referred to the health facility for delivery. Further, women delivering in the health facilities started receiving a newborn care kit, as demand side incentive. In January 2015, the proportion of expected deliveries conducted in PHCCs/PHCU’s by facility based TBAs had increased from 5.5% to 20%. Overall, the coverage of institutional delivery in Tirol west increased from 31% to 47%.

Although facility-based delivery cannot be defined as SBA when occurring in a PHCU or PHCC, as TBAs are not qualified personnel, it can be considered a safe one, as conducted by staff who have been trained, who have access to adequate equipment and supplies and who are able to recognize risk signals and promptly activate the referral system (ambulance) to transfer the mother to the Hospital. For this reason, the above described intervention consisting in attracting women to the HF through TBAs involvement and demand side incentives is considered functional to achieve the objective of
reducing maternal mortality and morbidity through an increased access and utilization of maternal health services.

What done at PHC level reflects a similar initiative previously taken at Tirol County Hospital. Besides keeping training on job the TBAs who are part of Hospital workforce (as MoH staff) and who are operating under the constant supervision of qualified midwives, it was identified a group of village based TBAs, living in Hospital surrounding areas and they have been trained on safe motherhood promotion and prompt referral; on monthly bases they are meeting to report their activities and to receive an incentive for each woman they have brought to the Hospital for delivery. Mothers delivering in the Hospital as well are receiving the baby kit as demand side incentive.

The positive results mentioned above are likely to be due to a combination of different interventions, being the gradually changing role of TBAs and their integration into the formal health system on of them. Despite it seeming quite promising, still little is known about how the integration is working (and which enabling factors or barriers is eventually encountering), the adaptation of TBAs to their new role, perceptions of different stakeholders towards these phenomena.

Research question and objectives

Research question

Is the model of TBA integration into the formal health system currently applied in Tirol West County effective in increasing access and utilization of maternal health services in general and of facility-based delivery in particular?

Which are the factors facilitating TBAs integration into formal Health System and which are those challenging it?

Is TBAs integration into formal Health System well accepted by the TBAs, pregnant women, health personnel and the community and therefore sustainable on the longer term and replicable on wider scale?

Objectives

1. General objective

To explore whether the model of TBA integration into the health system currently applied in Tirol West County is effective in increasing access and utilization of maternal health services in general and of facility based delivery in particular, which factors are facilitating or, at the contrary, hampering it and how it is perceived by the TBAs, pregnant women, health personnel and the community and therefore the extent it is sustainable on longer term and replicable on wider scale into the State and the Country.

2. Specific objectives

To explore if the new role of TBAs in Tirol West County (as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities) is enabling women overcoming the main barriers they are encountering in accessing and using maternal health services or not (and if, at the contrary, it is constituting an additional obstacle).

To explore if the new role of TBAs in Tirol West County (as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities) is perceived as having a specific added value compared to other interventions in place, aimed to promote access to and utilization of maternal health services.

To understand which factors are facilitating or challenging TBAs in assuming their new role in the health system.

To assess the perception of community based TBAs towards their new role of promoting of skilled birth attendance and accompanying women to health facilities.

To assess the perception of facility based TBAs towards their role of providing maternity services in these facilities.
To assess the perception of women on the role of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities and their preference between the current model and the previous one (TBAs assisting deliveries in the villages).

To assess the perception of health professionals on the role of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters.

To assess the perception of the community on the roles of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities and their preference between the current model and the previous one (TBAs assisting deliveries in the villages).

To assess the perception of local authorities towards TBAs integration into formal health system and their attitude towards further development of this model.

**Methodology**

**Study design**

This will be a qualitative study utilizing focus group discussions (FGDs) and key informant interviews (KIIs) as data collection methods. FGDs will be used to explore perceptions towards the new role of TBAs, the enabling or constraining factors affecting their integration into the health system and its impact on maternal health services access and utilization, observing how TBAs and mothers interact in a social context and how this interaction modifies their personal views and opinions. KIIs will be used to gather in-depth information from health professionals and community leaders on the integration of TBAs in the health system and to triangulate the information collected through FGDs.

**Study population and study samples**

The study will take place in Tirol West County, Lakes State. The county has an estimated population of around 123,292 people divided into the following 7 payams: Abang, Anuol, Geng Geng, Aluakluak, Geer, Mapourdit, Tirol Town.

In the county there are XXX TBAs recognized by the CHD, XXX working in the Hospital, XXX working in the PHC facilities, XXX community based. They can be further divided in 1) TBAs who have abandoned home delivery and are now accompanying women to deliver in health facilities, 2) TBAs who are still attending to home deliveries (and who might or not refer as well). All of them will be included in the study.

Besides from TBAs, data will be collected from different sources including: women who delivered in the past one year, health professionals, the staff of CHD and village health committee members. TBAs and mothers will be part of the FGD, while the other profile will be interviewed. The health professionals to be interviewed will include: 1) Professional maternity staff at PHCCs/PHCUs, 2) head staffs (in-charges) of PHCCs/PHCUs, and 3) Professional maternity staff at the hospitals. The County Health Department staff who will participate into the KKI will be the county medical officer and the head of maternal health services in the county. The figure 1 summarizes the study samples.

**Sample size and sampling process**

Being a qualitative study, the sample should be theoretical, meaning the choice of the number and type of people to be enrolled depend on the extent they can contribute to provide relevant information to respond to the research question (purposively rather than statistical selection).

The County Authorities will provide the list of recognized facilities and community based TBAs and all of them will be included in the study as FGD participants.

The TBAs still conducting deliveries at home will be identified with the help of village health committees, community health workers and other TBAs.

A sample of 5 villages will be randomly selected and from each one of them XXX women who deliver within one year will be randomly selected from the list compiled with the help of the village health committees and community health workers. The time frame of 1 year has been chosen to aid recall and to ensure the collected reflect current practice. It is also the period during which Doctors with Africa CUAMM has started focusing more consistently on TBAs role in Maternal Health Promotion.
A total of 14 FGDs, each with 8-10 participants will be conducted. Each FG participant will be randomly selected, to ensure each group including people with different views.

Participants of KIIS will be selected amongst those believed to have the highest knowledge about maternal health issues in the county and they will be as follows: One hospital maternity staff and one in-charge per PHCC/PHCU, One maternity staff and one maternity in-charge per hospital, 4 village health committee members, 2 CHD staffs.

![Figure 1](image-url) A summary of study participants

**Study method and data collection**

FGDs and KIIs will be conducted utilizing open-ended question guides that will allow for a certain degree of flexibility in gathering information. Pretesting of FGD and KII question guides will be performed during the training of data collectors. Socio-demographic characteristics of FGD participants will be collected using a closed-ended questionnaire.

Each FGD will be conducted by two Dinka language speaking facilitators. For cultural reasons, facilitators of FGDs will be female and well versed with the local language and culture. One data collector will be in charge of facilitating the sessions while the other one will manage audio recordings and provide additional support. The data collectors will be trained for one day and will be supervised by the principal investigator who will be present at all FGDs. The venues for FGDs will include local churches, schools or under trees, as considered most convenient by participants. To ensure that participants maintain concentration, each FGD session will last for about 1 hour. Refreshments will be served.

KIIs will be conducted at venues and time that are convenient to participants following prior arrangements with the data collectors.

All FGD and KII will be audio recorded after obtaining permission from participants.

**Data analysis**

Audio recordings will be transcribed and read through several times to obtain an overall picture and identify emerging patterns. The transcripts will then be coded and analyzed based on thematic and content analysis using NVivo 10. A pre-identified list of themes will be set up in NVivo and this list will be updated as new themes emerge during coding. These themes will form the basis for further data synthesis and inference.

**Limitations of the study**

The following are potential limitations of this study:

1. Some villages may be inaccessible because of bad roads or insecurity. In case this happens, suitable replacements will be identified.
2. There is potential for loss of information during translation and transcription. To mitigate this problem, attempts will be made to recruit the best available data collectors and translators.

3. As TBAs’ role revision is multifaceted with many concurrent interventions aimed at improving maternal and child health, it is not possible to exclusively attribute any specific outcome to the integration of TBAs in the health system.

**Results**

Of the 172 TBAs identified, 171 were interviewed (121 in Tirol East county and 50 in Tirol West county), with one TBA refusing consent for interview. Demographics All TBAs were women aged between 24 and 85 years. The mean age was 59.6 years (median 60 years), and only eight respondents (4.6%) were aged under 40 years. Ages should be considered approximate and interpreted with caution, as they are based on the respondent's own estimate confirmed with qualitative exploration matching respondents' birth, marriage and birth of first child to notable local events with fixed dates. Two thirds of respondents (66.1%) were Nyan, and 27.5% were Adior, almost two thirds (64.3%) were currently married, 32.7% were widowed, and a small proportion were either divorced or had never been married. All except two of the respondents (98.8%) had children of their own: the highest number of children born to a respondent was 14, and the mean number of children was 7.3 (median 8). Only 7.0% TBAs had ever attended school.

**Research designs used (n=63)**

The Purpose of this study health interventions linked with TBAs has been to promote the use of skilled care whether through additional training of TBAs or by promoting formally trained medical professionals. Organizations such as the Doctors with Africa work with governments and communities to increase access and utilization of skilled birth attendants who have been formally trained because this reduces the risk of morbidity and mortality of both the mother and the child.

Methodology a qualitative study utilizing focuses group discussions (FGDs) and key informant interviews (KII) as data collection methods. FGDs will be used to explore perceptions towards the new role of TBAs, the enabling or constraining factors affecting their integration into the health system and its impact on maternal health services access and utilization, observing how TBAs and mothers interact in a social context and how this interaction modifies their personal views and opinions. KII will be used to gather in-depth information from health professionals and community leaders on the integration of TBAs in the health system and to triangulate the information collected through FGDs.

**Results**

This poster presents findings for the following aspects of the sample of studies:

- Type of document, country of origin, and year of publication;
- Research design and method used to evaluate TBA training;
- Intervention, TBA training, including curriculum content, intensity and productivity of TBA training programs, training modalities, approaches, and follow-up of trained TBAs; and
- Effect of TBA training on TBA ‘Knowledge’ and on TBA client or maternal ‘Knowledge’.

The effects of TBA training on TBA and maternal ‘Attitude’, ‘Behavior’, ‘Advice’ (a subset of behavior), and on ‘Pregnancy Outcomes’ are forthcoming.
Table 1. Research designs used (n=63)

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>STUDIES (n)</th>
<th>PERCENT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST COMPARISON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Post comparison, 2 groups</td>
<td>28</td>
<td>44%</td>
</tr>
<tr>
<td>• Post comparison, &gt; 2 groups</td>
<td>5</td>
<td>8%</td>
</tr>
<tr>
<td>• Post comparison, 2 groups, multiple observations</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>PRE/POST COMPARISON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pre/post comparison, 2 groups</td>
<td>10</td>
<td>16%</td>
</tr>
<tr>
<td>• Pre/post comparison, 1 group</td>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>• Pre/post comparison, gain score</td>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>• Pre/post comparison, 2 groups, multiple observations</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>• Pre/post comparison, 1 group, multiple observations</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>• Baseline/post comparison, 1 group</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>• Baseline/post comparison, 2 groups</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mixed(^1)</td>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>• Baseline comparison, 2 groups</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>

\(^1\)Mixed designs occurred in some studies having multiple data sets.

Post comparison was used most often (54%), followed by simple pre/post or baseline/post comparison without a control group (33%). The rigorous pre/post comparison with a control group was used infrequently (6%).

Table 2. Time frame

<table>
<thead>
<tr>
<th>MILESTONES/ACTIVITY</th>
<th>May 2017 – Dec 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write up of the Research Proposal</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>Approval by MoH Juba ethical review committee and by Tirol County Health Department</td>
<td></td>
</tr>
<tr>
<td>Organize for funds</td>
<td></td>
</tr>
<tr>
<td>Selection of FDGs and KII s</td>
<td></td>
</tr>
<tr>
<td>Introduction of the study in the HUs, local leaders and CHD</td>
<td></td>
</tr>
<tr>
<td>Identification and training of data collectors</td>
<td></td>
</tr>
<tr>
<td>Pre-test study tools and revise them</td>
<td></td>
</tr>
<tr>
<td>Preparation of schedule for collection of</td>
<td></td>
</tr>
</tbody>
</table>
Experience as a TBA

Respondents had worked as a TBA for an average of 23.9 years (median 24 years; range = 1-60 years). The mean age at which women began working as a TBA was 35.6 years (median 35 years; range 19-63 years). The majority worked only in their own village, but 32.7% also worked in at least one other village. Most TBAs had at least one other TBA working (although not necessarily residing) in their village, with a mean of 3.6 TBAs per village overall. Only one-fifth of TBAs (22.2%) had received any training from a health professional. TBAs from Nyang were more likely to have received training compared to those from Adior (36.0% cf 16.5%; p=0.008). The most commonly reported training providers overall were nurses from local public health facilities, who accounted for over half of the training in Nyang, although in Adior, Caritas or Catholic missionaries were the most common source of training. Information regarding the recency, length or content of training was not collected, as respondents during piloting were generally unable to reliably recall this information. There was wide variation in the reported frequency of attending deliveries. More than two-thirds of the TBAs (70.8%) had not attended any deliveries in the previous month; 36.8% had not attended any deliveries in the previous four months; and 11.1% had not attended any deliveries in the last two years. Among those who had attended at least one delivery in the previous month, the mean attendance rate was 1.69 deliveries per month. Overall, the mean delivery attendance rate per month as measured by one-month recall was 0.49 (median 0; range 0-4), and as measured by eight months recall from a fixed event was 0.41 deliveries per month, suggesting an annual average delivery attendance rate of five to six deliveries per TBA. The majority of TBAs (72.5%) were normally paid money and/or in-kind for their services. Most TBAs (61.4%) received money (an average amount of SSP 52 i.e. ≈USD 3 (median 200 SSP; range SSP - 200 SSP). Some TBAs also received in-kind payments of meat (30.4%) or other commodities (7.6%) such as tobacco or sugar.

Antenatal care

Most TBAs (91.2%) normally had antenatal contact with women prior to assisting with their deliveries. Respondents reported a mean of 2.4 antenatal visits for each woman they cared for (median 2; range 1-6).

Dietary advice: almost all TBAs (97.1%) gave advice about diet during pregnancy. The most common advice, given by 49.1% of TBAs, was that pregnant women should eat whatever they wished. Specific foods that were promoted included vegetables (35.1%), porridge (33.9%), herbs (22.8%) and a mixture of milk and water (19.3%). However, most respondents also advised against some foods including meat from sick animals (64.9%) and milk from sick animals (60.2%). Other foods that were discouraged by a minority were milk (18.7%), eggs (11.7%), bitter herbs (9.9%) and alcohol (7.0%).

Health facility antenatal check-ups

Almost all TBAs (95.9%) reported advising women to attend a health facility for a routine antenatal check-up. Antenatal referrals were most commonly made to local dispensaries (56.1%) and health centers (28.1%), which are the two lowest tiers in the South Sudan health system but the most geographically accessible in the study sites. One-fifth (20.5%) referred to the district or referral hospital, and the remaining 7.0% to other places such as the sub-district hospital or a mobile clinic. Respondents in Nyang were much more likely to refer to the local dispensary compared with those in Adior (74.0% cf 48.8%; p=0.002), and much less likely to refer to the district or referral hospital (2.0% cf 28.1%; p<0.001).
Normal delivery practice

Hand hygiene: most TBAs (93.1%) reported washing their hands before assisting at the most recent delivery attended, with higher rates in Nyang than Adior (100% cf 90.1%, p=0.019). A much lower proportion reported wearing hand protection (e.g. gloves, plastic bags) during their last delivery: only 42.1% overall. Use of hand protection was better in Nyang, twice that in Adior (66.0% cf 32.2%; p<0.001). Most TBAs (80.1%) reported washing their hands before cutting the umbilical cord at their most recent delivery; this practice was more prevalent in Nyang than in Adior (96.0% cf 73.6%; p=0.001). Only 6.4% of TBAs had ever put their hands inside the birth canal during labor, which was more common in Nyang than Adior (16.0% cf 2.5%; p=0.001).

Delivery of placenta: delivery of the placenta was generally expectant, and encouraging few TBAs routinely pulled on the umbilical cord to assist delivery of the placenta. If the placenta failed to deliver, the most common interventions were to massage the woman's belly (53.8%), induce vomiting (44.4%), and/or make a referral to a health facility (28.7%). Other less common interventions were to give the woman water to drink, pull on the cord, and give herbs.

Cord management: TBAs overwhelmingly advocated cutting the umbilical cord immediately after delivering the baby (98.2%). The tool usually used for cord cutting was a new/unused razor blade (89.5%). Just under half of the respondents (42.1%) usually anointed the cord stump after cutting; most commonly with ash, oil or herbs.

Postnatal care

Almost all TBAs stayed with their patients for many days after delivery: 88.9% of respondents normally stayed a week or more after delivery; 66.1% stayed at least four weeks, and the longest stay reported was 12 weeks. On average, TBAs stayed 34.2 days after delivery (median 28 days; range 1 hour-12 weeks). All but one TBA routinely gave advice about neonatal feeding during the post-natal period. Almost all TBAs (97.1%) advised exclusive breastfeeding. In contradiction to this, nearly one in five respondents (18.7%) said they recommended babies be given substances apart from breast milk during the first few weeks of life. A large majority (93.0%) said that babies should be breastfed "immediately" or "as soon as possible" after delivery.

Recognition and management of complications

Recognition of danger signs during pregnancy: respondents were asked (unprompted) to list indications that a pregnant woman might have problems during her delivery. A large majority (92.4%) were able to identify at least one indication. The most frequently named indications were weakness (37.4%), abnormal lie of the baby (36.3%), anaemia (22.8%), a large baby (17.0%), a history of problems in a previous pregnancy (15.8%), and bleeding during pregnancy (10.5%). Respondents were also asked (unprompted) to list indications that a labouring woman was in danger; 95.3% were able to identify at least one indication. The most frequently named indications were slow progression of labour (44.4%), abnormal lie/presentation (34.5%), weakness (34.5%), excessive bleeding during labour (21.1%), a large baby (16.4%), and the woman falling unconscious (12.9%). TBAs were shown pictures depicting four complications of labour (post-partum haemorrhage, obstructed labour, maternal sepsis and birth asphyxia). If they did not recognise a complication from the picture, they were informed what it was, and asked if they had seen it before. They were then asked open-ended, unprompted questions regarding the signs, symptoms and management of each complication.

Post-partum hemorrhage (PPH): almost all TBAs (94.7%) had previously seen a woman with PPH. When asked to name signs and symptoms of PPH (defined as "when a woman is bleeding so much her life is in danger"), respondents commonly mentioned bleeding which did not stop (93.0%), the woman losing consciousness (66.7%), and weakness/tiredness (55.6%). For management of PPH, 62.6% of TBAs said (unprompted) that they would refer the woman to a health facility. Other interventions commonly mentioned were feeding the woman blood (59.6%) and giving her medicinal herbs (21.2%). Of the 64 TBAs who did not mention referral in response to the unprompted question, 73.4% said they would make a referral to a facility for this condition, when asked directly about it. Among all of the TBAs who said they would refer a woman with PPH to a health facility (n=154), the most frequently reported indications for referral were bleeding which did not stop (78.4%), loss of
consciousness (63.2%), weakness/tiredness (45.6%), failure of initial management (12.9%), and woman in pain (8.8%).

Obstructed labour: nearly all TBAs (94.7%) said they had previously seen obstructed labour. When asked to name signs and symptoms of obstructed labour, respondents commonly mentioned long duration of labour (89.5%), abnormal lie/presentation (46.8%), the woman stopping pushing (33.3%), weakness/tiredness (26.3%), a large baby (22.2%), and a change in the shape of the woman's abdomen (12.3%). Almost all TBAs (90.1%) identified referral to a health facility as their intervention of choice for obstructed labour (unprompted). Other interventions included massaging the woman (8.8%) and giving herbs (8.2%). A small number said they would call the nurse or doctor, or make the woman walk around. Of the 15 TBAs who did not mention referral in response to the unprompted question, 73.3% said they would make a referral to a facility for this condition, when asked directly about it. Among all of the TBAs who agreed that they would refer a woman with obstructed labour to a health facility (n=164), the most frequently reported indication for referral was the length of time without progress (83.0%). Other commonly mentioned indications for referral were pain (45.6%), weakness (42.1%), woman stopping pushing (26.9%), failure of initial management by TBA (12.9%) and unconsciousness (11.7%). Most TBAs (78.4%) said they would wait a day or longer before referring a labouring woman to a health facility, and 37.1% gave waiting times of two days or longer. The mean wait time was 31.3 hours, with a median of 24 hours.

Maternal sepsis: nearly all TBAs (93.6%) said they had previously seen a woman with maternal sepsis. As with other obstetric complications, the most commonly described intervention for maternal sepsis was referral to a health facility (66.1%). Slightly more than half of the TBAs (53.8%) said they would use medicinal herbs to treat maternal sepsis, and 34.5% mentioned giving food to the woman as an intervention. Of the 57 TBAs who did not mention referral in response to the unprompted question, 70.2% said they would make a referral to a facility for this condition when asked directly about it. Among all of the TBAs who agreed that they would refer a woman with maternal sepsis to a health facility (n=153), the most frequently reported indications for referral to a health facility were long duration of fever (76.0%), weakness (51.5%), inability to eat or drink (39.2%), abdominal pain or tenderness (36.8%) and inability to breastfeed (17.0%).

Birth asphyxia: a majority of TBAs (82.5%) said they had previously seen a baby who did not begin breathing spontaneously at birth. The commonly reported interventions for birth asphyxia were splashing the baby with water (48.5%), holding the baby upside down (40.9%), pinching the baby (24.6%), ringing a bell near the baby (17.0%) and massaging the baby (11.7%). Only 2.3% mentioned calling a doctor or nurse.

Traditional birth attendants' relationships with health facilities

Referral during labour: four out of five respondents (80.1%) had previously referred a woman in labour to a health facility. Of those who had made at least one previous referral, 53.3% said they accompanied the woman to the health facility "always" or "most of the time". Only 14.6% said they never accompanied their patients. The decision to take a labouring woman to a health facility almost always involved the TBA (reported by 96.5% of respondents), and was usually jointly made with the woman's husband (80.1%), and occasionally with the woman's mother-in-law (7.0%). The labouring woman herself was not mentioned as a participant in the decision-making process by any respondent.

Assisting with facility-based care: over half of the TBAs (54.4%) had been present for at least one delivery in a health facility. A much smaller proportion of the overall cohort (14.0%) had assisted with a delivery at a health facility. However, nearly three quarters of the respondents (72.0%) had provided postnatal care for a woman while she was in a health facility, and most (94.6%) had provided postnatal care for a woman after discharge following a facility-based delivery.

Ethical considerations

The present protocol will be shared with Tirol West CHD and Lakes State MoH for their inputs and approval. It will be then presented to the Ministry of Health in Juba for approval by the Ethics Committee.
FGD participants will be informed about study contents and purposes and how the data to be collected will be used. Participants will also be informed of their right to exit the FGD at any time without future prejudice in access to health services. In this case a replacement will be called in agreement with the community leaders. After the explanation, participants will be asked to sign the informed consent format, whose content as well will be explained in details, or to provide verbal consent, which will be audio recorded. A similar process will be followed for the participants in the KIs. Participants will be informed of their right to ask for additional clarifications at any time during the study.

Permission to conduct the study in selected villages will also be sought from village leaders. Confidentiality will be assured. All collected information including audio recordings and transcripts will be kept on password protected computers and accessible only to the research team. The study report will be anonymous and will bear no personal identifiers which might help in matching a statement with the person who made it.

There is a certain risk for psychological distress among women as those having experienced a difficult delivery or one with unfavorable outcome might feel uncomfortable while trying to recall it. The study team will pay attention to such discomfort and will stop the conversation at any time that happens.

Leaving the choice of activity venue and time to the participants should minimize the logistic constraints they might encounter in participating in the study.

No personal identifiers that might help in matching a statement with the person who made it will be included in the report. All FGD participants will be compensated in kind for their time. No monetary incentives will be provided.

References


The era of Millennium Development Goals witnessed a 59% increase in the deliveries assisted by skilled birth attendants (SBAs) and a 44% reduction in Maternal Mortality ratio (MMR) worldwide [1, 2]. Despite this achievement, each year, 45 million women still deliver without skilled attendance [1] and 303,000 die from complications related to pregnancy or childbirth worldwide [2]. Almost all maternal deaths (99%) occur in developing countries, with sub-Saharan Africa accounting for 66% of the deaths [2]. Thus, maternal mortality remains an agenda for global development as reflected in the Sustainable Development Goals [3].

Between the 1970s and 1990s, the international response to maternal mortality included training of traditional birth attendants (TBAs) [4] to attend to deliveries. Although TBAs working in well-structured contexts may reduce perinatal deaths, stillbirths, and neonatal deaths [5], their training failed to reduce maternal mortality [6]. Thus, the use of skilled birth attendants (SBAs) became the key strategy to reduce maternal mortality in developing countries.

Nonetheless, in settings where SBAs are scarce and barriers to service access abound, TBAs still attend to a majority of childbirths [7–9]. In such contexts, the disconnection between TBAs and the formal health system may impede access to maternal health services [10]. Given that integration of TBAs into the health system may increase skilled birth attendance [11–15], there is a renewed interest in the linkage between TBAs and SBAs; with TBAs working as promoters of institutional childbirth [16].

Maternal mortality ratio (per 100,000 births) is estimated to have increased in South Sudan from 763.8 in 1990 to 956.8 in 2013 and is projected to remain in the range of 500 to 925 by 2030 [17]. This is due to a fragile health system, which has been exacerbated by decades of conflict. The provision of health services in the country is hampered by numerous challenges including a chronic shortage of professional health workers. Since 2012, Yirol West County Health Department (CHD) has been partnering with Doctors with Africa CUAMM (hereafter CUAMM), an Italian non-governmental organisation (NGO), to strengthen the delivery of primary health care services in the county. The county, however, lacks skilled health workers, especially in peripheral health facilities. To fill the gap, the Ministry of Health recruited and trained some TBAs to work in health facilities (hereafter referred to as facility-based TBAs). Most TBAs, however, continued to work in villages unsupervised (hereafter referred to as community-based TBAs).

Effective from May 2014, in line with the national guidelines aimed at improving the quality of primary health care services, the county authorities banned TBAs from attending to home births and directed that all women in labour be referred to health facilities. The community-based TBAs’ main task became referring women to health facilities for childbirth. However, the TBAs were also trained for three days on assessing pregnant women, detecting dangerous signs before; during; and after childbirth, clean delivery, and first aid in case of an obstetric emergency. Each TBA was paid a symbolic monthly incentive of US$4. Supervisory meetings between TBAs and staff working in health facilities were held monthly. To stimulate demand for institutional childbirth, women delivering in health facilities received baby kits containing a basin, a plastic cup, a bar of soap, and a baby blanket. This study aimed to 1) understand the extent of integration of community-based TBAs in the health system, 2) reveal the factors influencing this integration, and 3) explore the perceived solutions to the challenges community-based TBAs faced in adopting their new roles.
This study was conducted in Yirol West County, in the former Lakes State, South Sudan. In 2017, the county had an estimated population of 142,701 people and was divided into 7 payams (sub-county administrative units) namely: Abang, Anuol, Geng Geng, Aluakluak, Geer, Mapourdit and Yirol Town. The main ethnic group is Dinka (Atuot, Ciec and Jier clans) and semi-nomadic pastoralism and rudimentary crop farming are the main sources of livelihood for the inhabitants. At the time of the study, Yirol West County was served by two hospitals: Yirol County Hospital (a referral government hospital, which also serves Yirol East and Awerial counties) and St. Immaculate Hospital (a mission hospital in Mapourdit). The county was also served by 8 PHCU's and 2 primary health care centres (PHCC's).
Knowledge of Diabetic Foot Care among Nursing Practitioners in Rivers State, Nigeria

Article by Lilly-West B. R¹, Mildred E. John², Clement I³
¹,³Department of Nursing Sciences, Texila American University, Guyana
²Department of Nursing Science, College of Medical Sciences, University of Calabar, Calabar, Nigeria

Abstract

Diabetic foot ulcers have led to countless amputations and reduced quality of life among individuals living with diabetes. Specialized diabetic foot care has been shown to reduce the risk of foot ulcers and amputation among diabetics. The study assessed the knowledge of diabetic foot care among 100 nurses in the University of Port Harcourt Teaching Hospital and the Rivers State Hospitals Management Board Hospitals (which include General Hospitals from all the local government areas) in Rivers State, Nigeria. A structured questionnaire containing questions on different aspects of diabetic foot care was interviewer-administered to the nurses and scored accordingly. The results showed that only 34 (34%) had training on diabetic foot care; and most of the nurses who had training had more than 20 years of experience. It was observed that the knowledge of diabetic foot care was significantly higher among nurses with more than 10 years of experience (p = 0.0046). Nurses with less than 10 years of experience had a significantly poor knowledge of diabetic foot care. Knowledge of footwear assessment and assessing the patient’s capacity for self-care was found to be significantly lower among nurses who had no training on diabetes foot care (p = 0.0001). The study shows the urgent need for frequently organized training on diabetic foot care for nursing practitioners to improve the quality of diabetes care in Rivers state, Nigeria.

Keywords: Diabetes, Diabetic Foot, Diabetes Foot Care, Nursing Practitioners.

Introduction

More than 300 million people are affected with Diabetes Mellitus (DM) globally (Rashimi, 2017). In Nigeria the prevalence of diabetes is reported to range from 3 – 11% in the different regions of the country (Oyetunde and Famakinwa, 2014; Oputa et al., 2015; Ejike et al., 2015). The rising incidence of diabetes corresponds with an increase in complications and morbidity with resultant mortality and increase in healthcare costs globally (ADA, 2013).

Diabetic foot ulcer is a significant complication of diabetes mellitus and a risk factor for leg amputations which could lead to a poor quality of life and eventual loss of productivity among diabetics (Schaper et al., 2012). Foot ulcers are responsible for infections, gangrene, amputation and even death if they are not managed properly (Beiranvand et al., 2015). In addition, lower extremity amputation is associated with prolonged hospitalization, increased healthcare cost and rehabilitation, which is also required to home care and social support (Schaper et al., 2012; ADA, 2013; Beiranvand et al., 2015). It has been reported that between 49-85% of all amputations can be prevented by adopting well-structured preventive management for example; healthy diet, physical activity, the prevention of overweight & obesity, and extensive foot care (Ahmed et al., 2011).

There is adequate evidence showing that the appropriate provision of diabetic foot care service is associated with a reduction in related amputations (Beiranvand et al., 2015). In addition to adopting secondary prevention therapies of limb amputations such as peripheral re-vascularization, aggressive wound debridement and cardiovascular risk management, it is recommended that primary prevention strategies such as screening and patient education be adopted to minimize the onset and recurrence of diabetic foot disease (Soriguer et al., 2012; Ali et al., 2013; Zarchi et al., 2014; Uba et al., 2015).

While a multi-disciplinary approach to diabetic foot ulcer is preferred, it is evident that nurses have a great deal of responsibility in providing essential care and information to diabetics to enable the patient live a quality life (Ahmed et al., 2011; Beiranvand et al., 2015). The nurse, therefore, must possess the...
expected knowledge to enable the achievement of this goal. Studies suggest that patient education with proper foot care practices may reduce diabetes related foot ulceration and amputations (Soriguer et al., 2012). Also, with adequate foot care practices problems such as corns and callosities are reduced and managed (Ali et al., 2013). Specialized foot care by nurses in developed countries have recorded considerable successes in the prevention of diabetic foot ulcers, prolonging the use of the feet of diabetic patients and prevention of amputation (Uba et al., 2015). However, it was reported in some developing countries that nurses demonstrated poor knowledge of diabetes, especially specialized diabetic foot care (Ali et al., 2013; Oyetunde and Famakinwa, 2014; Uba et al., 2015). There is a paucity of data on the knowledge and practice of diabetic foot care among nurses in resource-poor settings such as Nigeria. This study assessed the knowledge of diabetic foot care amongst nurses. This is the first part of an intervention study to enhance specialized diabetic foot care among nurses in Rivers State, Nigeria, in order to improve the health outlook of diabetic patients.

Methodology

Study area

The study was carried out in the University of Port Harcourt Teaching Hospital and the Rivers State Hospitals Management Board Hospitals (which include General Hospitals from all the local government areas) in Rivers State, Nigeria.

Study sample

A total of 100 registered nurses in the medical and endocrinology clinics who were directly involved in diabetic patients care for more than 1 year in the hospitals were purposively selected for the study. Participation was voluntary and informed consent was obtained from all nurses, while approval to carry out the study was obtained from the Health Research Ethics Committees of both the University of Port Harcourt Teaching Hospital and the Rivers State Hospitals Management Board.

Study instrument

A structured questionnaire containing 32 items on specialized diabetic foot care as prepared by Abdullah et al., (2017) was adopted for the study. The questionnaire contained three sections including: Section A: Sociodemographic information of the nurses. Section B: Academic qualifications, years of experience and training received by the nurses. Section C contained questions on the knowledge of diabetic foot care in general foot care, Palpation, Auscultation, Footwear Assessment and Assessment of patient’s self-care capacity.

Data collection

The questionnaire was interviewer-administered by the researcher to each of the purposively selected 100 nurses. The researcher ensured all questionnaires were completely filled as responses to each question was appropriately filled according to the nurses’ responses.

Data analysis

Completed questionnaire items were analyzed using frequency counts and percentages. Responses to the different questions on knowledge of diabetic foot care was collated and the mean score calculated. Chi-square analysis was used to assess the association between knowledge of diabetic foot care, years of practice, training received and academic qualification. All analysis was done with The Epi Info software version 7 and a p-value < 0.05 was considered significant.

Results

Table 1 shows the socio-demographic distribution of the study subjects. The mean age of the Nurses was 44.9±8.9 years. Among the nurses, 6 (6.0%) were between 20 – 30 years, 34 (34.0%), were between 31 – 40 years, 30 (30.0%) were between 41 – 50 years, 27 (27.0%) were between 51 – 60 years and 3 (3.0) were above 60 years. Academic qualifications included; 5 (5.0%) Basic Diplomas, 51 (51.0%) Higher Diplomas, 36 (36.0%) Bachelor’s Degree, 6 (6.0%) Masters Degrees and 2 (2.0%) PhD. Distribution of the years of practice shows that 6 (6.0%) had <5 years of practice, 21 (21.0%) had
experience between 11 – 20 years and 31 – 40 years respectively, 22 (22.0%) had experience between 6 – 10 years and 30 (30.0%) had experience between 21 – 30 years.

Table 1. Sociodemographic information

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (n =100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (±SD)</td>
<td>44.9±8.9 years</td>
</tr>
<tr>
<td>Age Group (years)</td>
<td></td>
</tr>
<tr>
<td>20 – 30</td>
<td>6 (6.0)</td>
</tr>
<tr>
<td>31 – 40</td>
<td>34 (34.0)</td>
</tr>
<tr>
<td>41 – 50</td>
<td>30 (30.0)</td>
</tr>
<tr>
<td>51 – 60</td>
<td>27 (27.0)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>3 (3.0)</td>
</tr>
<tr>
<td>Academic Qualification</td>
<td></td>
</tr>
<tr>
<td>Basic Diploma (RN)</td>
<td>5 (5.0)</td>
</tr>
<tr>
<td>Higher Diploma (RN, RM)</td>
<td>51 (51.0)</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>36 (36.0)</td>
</tr>
<tr>
<td>Masters</td>
<td>6 (6.0)</td>
</tr>
<tr>
<td>PhD</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td>Years of Practice</td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>6 (6.0)</td>
</tr>
<tr>
<td>6 – 10 years</td>
<td>22 (22.0)</td>
</tr>
<tr>
<td>11 – 20 years</td>
<td>21 (21.0)</td>
</tr>
<tr>
<td>21 – 30 years</td>
<td>30 (30.0)</td>
</tr>
<tr>
<td>31 – 40 years</td>
<td>21 (21.0)</td>
</tr>
</tbody>
</table>

RN: Registered Nurse, RM: Registered Midwife

Of the 100 Nurses, 34 (34.0%) have had training on diabetic foot care and 66 (66.0%) had no training on diabetic foot care (Figure 1).

Assessment of knowledge on diabetic foot care is presented in Table 2. Only 24(24.0%) had knowledge of a standard of diabetic foot care and 76 (76.0%) did not. Other responses showed that 45 (45.0%) indicated that all patients with diabetes develop reduced blood flow in their feet, 10 (10.0%) indicated that all patients with diabetes develop lack of sensations in their feet, 15 (15.0%) responded that all patients with diabetes develop foot ulcers. Also, 5 (5.0%) indicated that all patients with diabetes develop gangrene, 97 (97.0%) agreed that patient is more prone to have foot ulcers if the patient has loss of sensation on the foot, 89 (89.0%) indicated that if a patient has reduced blood flow in the foot, is he/she more prone to get foot ulcers. While 56 (56.0%) indicated that they assess for diabetic foot in the diabetic patients they see.

Table 2. Knowledge of diabetic foot care

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of national or international standard for diabetic foot care</td>
<td>24 (24.0)</td>
<td>76 (76.0)</td>
</tr>
<tr>
<td>Do all patients with diabetes develop reduced blood flow in their feet?</td>
<td>45 (45.0)</td>
<td>55 (55.0)</td>
</tr>
<tr>
<td>Do all patients with diabetes develop lack of sensations in their feet?</td>
<td>10 (10.0)</td>
<td>90 (90.0)</td>
</tr>
<tr>
<td>Do all patients with diabetes develop foot ulcers?</td>
<td>15 (15.0)</td>
<td>85 (85.0)</td>
</tr>
<tr>
<td>Do all patients with diabetes develop gangrene?</td>
<td>5 (5.0)</td>
<td>95 (95.0)</td>
</tr>
<tr>
<td>Patient is more prone to have foot ulcers if the patient has loss of</td>
<td>97 (97.0)</td>
<td>3 (3.0)</td>
</tr>
<tr>
<td>sensation on the foot?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If a patient has reduced blood flow in the foot, is he/she more</td>
<td>89 (89.0)</td>
<td>11 (11.0)</td>
</tr>
<tr>
<td>prone to get foot ulcers?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do you assess for diabetic foot in the diabetes patients you see?  

56 (56.0) 44 (44.0)

Risk factors for foot ulcers mentioned by the nurses include; past foot ulcer history (24.7%), previous amputation (21.7%), peripheral neuropathy (19.8%), peripheral vascular disease (14.5%) foot deformity (13.6%), diabetic nephropathy (3.6%), poor glycemic control (1.4%) and cigarette smoking (0.6%) as presented in Table 3.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous amputation</td>
<td>78 (21.7)</td>
</tr>
<tr>
<td>Past foot ulcer history</td>
<td>89 (24.7)</td>
</tr>
<tr>
<td>Peripheral neuropathy</td>
<td>71 (19.8)</td>
</tr>
<tr>
<td>Foot deformity</td>
<td>49 (13.6)</td>
</tr>
<tr>
<td>Peripheral vascular disease</td>
<td>52 (14.5)</td>
</tr>
<tr>
<td>Visual impairment</td>
<td>-</td>
</tr>
<tr>
<td>Diabetic nephropathy</td>
<td>13 (3.6)</td>
</tr>
<tr>
<td>Poor glycemic control</td>
<td>5 (1.4)</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>2 (0.6)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>359 (100.0)</strong></td>
</tr>
</tbody>
</table>

Note: Multiple responses

Table 4 shows that 2 (5.9%) of the nurses trained on diabetic foot care had less than 5 years practicing experience, 6 (17.7%) had between 11-20 years and 21 – 30 years of experience respectively, 7 (20.5%) had between 6 – 10 years of experience and 13 (38.2%) had 31 – 40 years of experience. There was a significant difference between nurses that have been trained and those that have not been trained which had 31 – 40 years of experience (p = 0.023).

<table>
<thead>
<tr>
<th>Years of Practice</th>
<th>Training Received</th>
<th>Yes</th>
<th>No</th>
<th>Chi-Square (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 years</td>
<td></td>
<td>2 (5.9)</td>
<td>4 (6.1)</td>
<td>0.01 (0.9716)**</td>
</tr>
<tr>
<td>6 – 10 years</td>
<td></td>
<td>7 (20.5)</td>
<td>15 (22.7)</td>
<td>0.05 (0.8067)**</td>
</tr>
<tr>
<td>11 – 20 years</td>
<td></td>
<td>6 (17.7)</td>
<td>15 (22.7)</td>
<td>0.34 (0.5546)**</td>
</tr>
<tr>
<td>21 – 30 years</td>
<td></td>
<td>6 (17.7)</td>
<td>24 (36.4)</td>
<td>3.74 (0.0530)**</td>
</tr>
<tr>
<td>31 – 40 years</td>
<td></td>
<td>13 (38.2)</td>
<td>8 (12.1)</td>
<td>9.22 (0.0023)*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>34 (100.0)</strong></td>
<td><strong>66 (100.0)</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Statistically significant (p <0.05); **Not Statistically significant (p > 0.05)

Table 5 shows the level of knowledge on diabetic foot care, 90 (90.0%) had good knowledge on general foot inspection, 86 (86.0%) had good knowledge on diabetic foot assessment, 64 (64.0%) had good knowledge on palpation. Also, 80 (80.0%) had good knowledge of Auscultation, 77 (77.0%) had good knowledge on footwear assessment and 65 (65.0%) had good knowledge on the assessment of patient’s self-care capacity.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Good Knowledge</th>
<th>Poor Knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General foot inspection</td>
<td>90 (90.0%)</td>
<td>10 (10.0%)</td>
<td>100 (100.0%)</td>
</tr>
<tr>
<td>Diabetic foot assessment</td>
<td>86 (86.0%)</td>
<td>14 (14.0%)</td>
<td>100 (100.0%)</td>
</tr>
<tr>
<td>Palpation</td>
<td>64 (64.0%)</td>
<td>36 (36.0%)</td>
<td>100 (100.0%)</td>
</tr>
<tr>
<td>Auscultation</td>
<td>80 (80.0%)</td>
<td>20 (20.0%)</td>
<td>100 (100.0%)</td>
</tr>
</tbody>
</table>
Table 6 shows the difference in years of experience and knowledge of diabetic foot care amongst the nurses. The differences in the years of experience and the knowledge of diabetic foot care was found to be statistically significant (p < 0.05).

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Footwear Assessment</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Assessment of patient’s</td>
<td>(77.0%)</td>
<td>(23.0%)</td>
</tr>
<tr>
<td>self-care capacity</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>(100.0%)</td>
<td>(100.0%)</td>
</tr>
</tbody>
</table>
Table 6. Difference in years of experience and knowledge on diabetic foot care

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>&lt;5 years (n = 6) (%)</th>
<th>6 – 10 years (n = 22) (%)</th>
<th>11 – 20 years (n = 21) (%)</th>
<th>21 – 30 years (n = 30) (%)</th>
<th>31 – 40 years (n = 21) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General foot inspection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>3 (50.0)</td>
<td>18 (81.8)</td>
<td>20 (95.2)</td>
<td>29 (96.7)</td>
<td>20 (95.2)</td>
</tr>
<tr>
<td>Wrong</td>
<td>3 (50.0)</td>
<td>4 (18.2)</td>
<td>1 (4.8)</td>
<td>1 (3.3)</td>
<td>1 (4.8)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>15.06 (0.0046)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetic foot assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>3 (50.0)</td>
<td>16 (72.7)</td>
<td>18 (85.7)</td>
<td>28 (93.3)</td>
<td>20 (95.2)</td>
</tr>
<tr>
<td>Wrong</td>
<td>3 (50.0)</td>
<td>6 (27.3)</td>
<td>3 (14.3)</td>
<td>2 (6.7)</td>
<td>1 (4.8)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>11.73 (0.0195)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palpation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>0 (0.0)</td>
<td>10 (45.5)</td>
<td>12 (57.1)</td>
<td>25 (83.3)</td>
<td>16 (76.2)</td>
</tr>
<tr>
<td>Wrong</td>
<td>6 (100.0)</td>
<td>12 (55.5)</td>
<td>9 (42.9)</td>
<td>5 (16.7)</td>
<td>5 (23.8)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>20.32 (0.0004)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auscultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>1 (16.7)</td>
<td>12 (55.5)</td>
<td>18 (85.7)</td>
<td>29 (96.7)</td>
<td>20 (95.2)</td>
</tr>
<tr>
<td>Wrong</td>
<td>5 (83.3)</td>
<td>10 (45.5)</td>
<td>3 (14.3)</td>
<td>1 (3.3)</td>
<td>1 (4.8)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>32.64 (0.0001)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Footwear Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>1 (16.7)</td>
<td>12 (55.5)</td>
<td>16 (76.2)</td>
<td>27 (90.0)</td>
<td>21 (100.0)</td>
</tr>
<tr>
<td>Wrong</td>
<td>5 (83.3)</td>
<td>10 (45.5)</td>
<td>5 (23.8)</td>
<td>3 (10.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>27.74 (0.0001)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing Patient’s Self-care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>0 (0.0)</td>
<td>9 (40.9)</td>
<td>9 (42.9)</td>
<td>24 (80.0)</td>
<td>18 (85.7)</td>
</tr>
<tr>
<td>Wrong</td>
<td>6 (100.0)</td>
<td>13 (59.1)</td>
<td>13 (57.1)</td>
<td>6 (20.0)</td>
<td>3 (14.3)</td>
</tr>
<tr>
<td><strong>Chi-Square (p-value)</strong></td>
<td><strong>26.33 (0.0001)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Difference is statistically significant (p < 0.05).*
Table 7 shows that there is no difference in the knowledge of general foot inspection, diabetic foot assessment, palpation and auscultation between trained nurses and untrained nurses (p > 0.05). While knowledge on footwear assessment and assessing patient’s capacity for self-care was found to be statistically different between the trained and untrained nurses (p < 0.05).

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Trained (n=34)</th>
<th>Not Trained (n = 66)</th>
<th>Chi-Square (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General foot inspection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>31 (91.2)</td>
<td>59 (89.4)</td>
<td>0.07 (0.7783) **</td>
</tr>
<tr>
<td>Wrong</td>
<td>3 (8.8)</td>
<td>7 (10.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Diabetic foot assessment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>32 (94.1)</td>
<td>54 (81.8)</td>
<td>2.81 (0.0931) **</td>
</tr>
<tr>
<td>Wrong</td>
<td>2 (5.9)</td>
<td>12 (18.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Palpation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>22 (68.7)</td>
<td>40 (60.6)</td>
<td>0.61 (0.4329) **</td>
</tr>
<tr>
<td>Wrong</td>
<td>10 (1.3)</td>
<td>26 (39.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Auscultation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>30 (88.2)</td>
<td>50 (75.8)</td>
<td>2.18 (0.1394) **</td>
</tr>
<tr>
<td>Wrong</td>
<td>4 (11.8)</td>
<td>16 (24.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Footwear Assessment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>31 (91.2)</td>
<td>46 (69.7)</td>
<td>5.84 (0.0156) *</td>
</tr>
<tr>
<td>Wrong</td>
<td>3 (8.8)</td>
<td>20 (30.3)</td>
<td></td>
</tr>
<tr>
<td><strong>Assessing Patient’s Self-care Capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>29 (85.3)</td>
<td>31 (46.9)</td>
<td>13.7 (0.0002) *</td>
</tr>
<tr>
<td>Wrong</td>
<td>5 (14.7)</td>
<td>35 (53.1)</td>
<td></td>
</tr>
</tbody>
</table>

*Statistically significant (p < 0.05). **Not Statistically significant (p < 0.05).

**Discussion**

Knowledge of diabetic foot care is crucial in the appropriate practice of diabetic foot care with the aim of improving the quality of life of diabetic patients. Among the nurses sampled, most had higher diploma qualifications (RN and RM). Only 34% of the nurses reported to have special training in diabetic foot care. This is similar to the findings of Oyetunde and Famakinwa which reported a significantly low proportion (<40%) of nurses trained in specialized diabetic foot care in Ibadan, Nigeria (Oyetunde and Famakinwa, 2014). Specialized training on diabetic foot care among health care workers have been reportedly low (< 50%) in Sub-Saharan countries (Trepp et al., 2012; Mohammed, 2013). This is in contrast with the realities in developed countries, where specialized training of diabetic foot care among nurses in endocrinology and medical clinics of health institutions is more than 50% (Trepp et al., 2012). The most prominent risk factors for diabetic foot ulcer mentioned by the nurses were; past history of foot ulcer, previous amputation and peripheral neuropathy. These are consistent with the known common complications of diabetes mellitus reported in various studies (Trepp et al., 2012; Mohammed, 2013), indicating that the nurses have a basic knowledge of diabetes and its accompanying complication (Mohammed, 2013).

Training on diabetic foot care was shown to be higher and increased with the years of experience accordingly among the nurses. Nurses with more than 20 years of practice mostly had training on diabetic foot. This is consistent with the reports of previous studies showing the specialized training on diabetic foot tend to be significantly higher among healthcare professionals with a more year of experience especially in developing countries (Trepp et al., 2012; Mohammed, 2013). Generally
specialized training on diabetic foot rarely occurs in Nigeria, therefore a select few attend such training (Hu et al., 2011).

There was good knowledge (≥64.0%) on the different aspects of diabetic foot care among the nurses. However, the poor knowledge on the different aspects of diabetic foot care was significantly higher among nurses with less than 10 years of experience. This is consistent with the findings of similar studies, which reported a significant proportion of poor knowledge of diabetic foot care among nurses with less years of practicing experience (Schaper et al., 2012; Zarchi et al., 2014; Scoriguer et al., 2012). The importance of training was evident in the knowledge of footwear assessment and assessing the patient’s self-care capacity as trained nurses were found to be more knowledgeable compared to the untrained nurses (p < 0.05). This is consistent with the findings of the Oyetunde and Famakinwa (2014), which reported significantly poor knowledge and practice of footwear assessment and assessment of patient’s self-care abilities, especially among untrained nurses in Ibadan, Nigeria (Oyetunde and Famakinwa, 2014). Footwear assessment and self-care capacity are very significant aspects of prevention of diabetic foot ulcers and eventual amputations among individuals with diabetes (Trepp et al., 2012; Mohammed, 2013). The use of inappropriate footwear has been shown to significantly increase the risk of amputation (OR = 2.5; 1.4 – 10.5) (Trepp et al., 2012) While appropriate self-care has also been shown to significantly reduce the risks of foot ulcers and amputation among people living with diabetes (Ali et al., 2013; Abdullah et al., 2017). However, there was an averagely poor knowledge of the nurses on the aspects of Auscultation, Footwear Assessment and Assessment of Patient’s self-care capacity.

Conclusion

The study showed a relatively good knowledge of diabetic foot care among the nurses. However, nurses with experience less than 10 years notably had poor knowledge of the different aspects of diabetic foot care. Specialized training was shown to be very important, as trained nurses were shown to have better knowledge of diabetic foot care. Although only a small proportion of nurses (34%) had training on diabetic foot care. The study shows the urgent need for frequently organized training on diabetic foot care for nursing practitioners to improve the quality of diabetes care in Rivers state, Nigeria.

References


Prevalence of Acute and Moderate Malnutrition among Under Five Children in Three Counties of Western Lakes State, South Sudan

Article by Nebiyu Lera Alaro
Texila American University, Guyana
E-mail: nebiyulera@gmail.com

Abstract

The prevalence of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) of under-five children, in South Sudan is considerably high and is being aggravated by various internal conflicts and food insecurity ravaging the country. The situation has attracted the attention of various international organizations like World Food Programme (WFP), United Nations Children Emergency Fund (UNICEF), and other international Non-governmental Organizations (INGOs), for possible interventions. However, the success of the nutrition therapy programme in reducing the prevalence of SAM and MAM among under-five children, as implemented by these humanitarian organizations is hinged on many factors.

A retrospective cohort study was conducted by collecting reported data from District Health Information Software (DHIS) of SAM and MAM prevalence of under-five children across three years; 2015, 2006 and 2007 for three counties, and was analysed using SPSS. Findings revealed significant differences in SAM and MAM within counties and among counties across the three years. It was further revealed that there was rising prevalence of SAM and MAM (poor impact) among the counties as the nutrition therapy programme progressed across the three years in the three counties. It was suggested, among others, that training and re-training of health and nutrition workers, timely availability of food supplements, ensuring food security, unwavering adherence to the principle of neutrality and impartiality on the part of INGOs and government, and conduct of pre and post-intervention surveys for feedbacks, may serve as the panacea towards the present unsatisfying state of the nutrition therapy programme in the war-torn Lakes State of South Sudan.

Keywords: Nutrition therapy, Prevalence, Malnutrition, SAM, MAM, and South Sudan.

Introduction

In a developing country like South Sudan, various socio-economic problems are common, and this is always associated with negative effects like food scarcity with consequential malnutrition effect on the people especially the most vulnerable groups—women and the under-five children. According to World Food Program (2013), the situation in South Sudan is being worsened by the continuous insecurity following various internal conflicts which has caught the attention of various world-acclaimed donors and international Non-Governmental organizations (INGOs) The term “malnutrition” is actually a category of diseases that includes any illness resulting from an imbalance of calories or micronutrients (e.g. vitamins), either in dearth or excess. This study focused on the on the prevalence of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) in under-five children in Lakes state of South Sudan. The main purpose was to evaluate the efficacy of the nutrition therapy program on the prevalence of SAM and MAM in Lakes state of South Sudan in the three counties where the program is being implemented, as study areas.

The nutritional status of women and children is particularly important, because it is through women and their off-springs that the pernicious effects of malnutrition are propagated to future generations. A malnourished mother is likely to give birth to a low birth-weight (LBW) baby susceptible to disease and premature death, which only further undermines the economic development of the family and society, and continues the cycle of poverty and malnutrition. Although child malnutrition declined globally during the 1990s, with the prevalence of underweight children falling from 27% to 22% (Onis et al., 2004a), national levels of malnutrition still vary considerably (0% in Australia; 49% in
Afghanistan) (WHO, 2003). The largest decline in the level of child malnutrition was in eastern Asia where underweight levels decreased by one half between 1990 and 2000.

Underweight rates also declined in South-Eastern Asia (from 35% to 27%), and in Latin America and the Caribbean the rate of underweight children decreased by one third (from 9% to 6%) over the last 10 years. In contrast, South-Central Asia still has high levels of child malnutrition, even though the rate of underweight children declined from 50% to 41% during the 1990s. In Africa, the number of underweight children actually increased between 1990 and 2000 (from 26 million to 32 million), and 25% of all children under five years old are underweight, which signals that little changed from a decade earlier. The projection for 2005 is that the prevalence of child malnutrition will continue to decline in all regions in Africa, especially in sub-Saharan Africa (de Onis et al., 2004b). The World Food Program (WFP) estimates that 842 million people worldwide do not have access to enough food, approximately 146 million of which are children. Those included in this estimate range from simply too little food to extreme malnourishment. Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) have been recognized as the most serious type of hunger, with 20 million and 35 million respective cases each year occurring in children less than 5 years of age (Edesia, 2012). According to WHO (2009), SAM is defined as a child having a weight-for-height ratio >3 standard deviations below the mean for their age, and MAM is a weight-for-height ratio >2 but <3 standard deviations. A notable point is that the majority of these cases occur in South Asia and Sub-Saharan Africa.

This study was therefore directed towards unraveling the efficacy of nutrition therapy program, supported by WFP and UNICEF, on the SAM and MAM prevalence among under-five children in three counties (Rumbek North, Yirol West, and Cueibet) of Western Lakes State of South Sudan.

Statement of problem

The prevalence of acute malnutrition among under-five children, in South Sudan is reportedly high. Effective intervention in terms of nutrition therapy programme from the humanitarian organizations has always been playing a pivotal role in addressing the situation. However, the impact of the much needed programme may be confronted with various challenges which may serve as threats to the overall success of the interventions and hamper the achievement of the set goals in this regard. One of such problem is the internal wars besieging South Sudan, and food insecurity.

Conducting an impact study on the efficacy of the various therapeutic programmes as sponsored by UNICEF and WFP in South Sudan is therefore an important step to unravel the state of the programme, and to determine the possible challenges that may be confronting the system.

Justification of the study

Implementing nutrition therapy programme has become important in controlling the acute malnutrition level especially among under-five children, in sub-sahara Africa countries with poor resources, and low level of income with many people earning below one U.S dollar per day. But it is not without its challenges in which having the knowledge about its impact during the programme will be of great importance. Hence this study was intended to bridge this gap of knowledge regarding the impact of the nutrition therapy programme on the prevalence of SAM and MAM in the war-torn Lakes state of South Sudan. It will serve as a clue to the next line of action for all stakeholders involved in the implementation of the nutrition therapy services for this vulnerable group of people – the under-five children, especially in a yet unstable country, like South Sudan.

Background of study area

Western Lakes State was one of the ten states of South Sudan. It has an area of 40,235 km². Rumbek was the capital of the state. Lakes State was in the Bahr el Ghazal region of South Sudan, in addition to Northern Bahr el Ghazal, Western Bahr el Ghazal, and Warrap states. Bahr el Ghazal itself was a former province which was split from the Anglo-Egyptian or province of Equatoria, in 1948. The eastern border was the White Nile with Jonglei on the opposite bank. To the northeast lied the Unity State. Other borders included Warrap State towards the northwest, Western Equatoria to the south and west, and Central Equatoria to the south.
According to the population census conducted in 2008, Lakes state comprises of eight (8) counties, with their respective population thus; Cuiabet (47,041), Rumbek North (43,410), Rumbek Central (153,550), Wulu (40,550), Rumbek East (122,832), Yirol West (103,190), Yirol East (67,402), Awerial (47,041). This study was conducted in the three of the eight counties namely; Cuiabet, Rumbek North and Yirol West.

Hypotheses

The two hypotheses of this study include;
1. Ho: There will be no significant differences in the prevalence of SAM and MAM among under-five children in each of the three counties, across the three years in Lakes State of South Sudan
   H1: There will be significant differences in the prevalence of SAM and MAM among under-five children, in each of the three counties, across the years in Lakes State of South Sudan
2. Ho: There will be no significant differences in the prevalence of SAM and MAM among under-five children, among the three counties, across the three years in Lakes State of South Sudan
   H1: There will be significant differences in the prevalence of SAM and MAM among under-five children, among the three counties, across the three years in Lakes State of South Sudan

Literature review

Concept of malnutrition

Malnutrition can be defined as the lack of a sufficient quantity or quality of nutrients to maintain the body system at some definable level of functioning. It has been estimated that 37-80 per cent of all pre-school children in the developing countries suffer from protein calorie malnutrition as assessed by the manifestation of syndromes, nutritional indexes, and weight deviations (Bengoa 1974). Nutrition encompasses processes leading to and involved with the utilization of nutrients for growth, development, maintenance and activity. Malnutrition results from the inadequate intake of nutrients, or from disease factors that affect digestion, absorption, transport and the utilization of nutrients. (UNICEF,1992). World Health Organization defines malnutrition as the cellular imbalance between supply of nutrients and energy and body’s demand to ensure growth, maintenance and specific function (WHO, 2000).

The nutrition status in South Sudan is poorly characterized by high level of underweight and chronic malnutrition, with persistently elevated level of acute malnutrition. Therefore, the available data about nutritional status of children under 5 years in South Sudan reflects the worse and miserable situation, especially in the marginalized rural areas but the situation is extending to urban area of Sudan. (Abdalla et al., 2009) The terms ’malnutrition' and ‘under-nutrition', however, tend to be used interchangeably in the literature (Lehmann, 1991).

Epidemiology of global acute malnutrition

A recent analysis estimated that 32 out of 134 countries with available data had a prevalence of acute malnutrition1 of 10% or more, a burden commonly recognized as a “public health emergency requiring immediate intervention” Globally, these estimates equate to about 33 million children suffering moderate acute malnutrition and a further 19 million suffering severe acute malnutrition (UNICEF et al., 2012).

Prevalence of acute malnutrition may increase substantially with high levels of severe acute malnutrition and excess child mortality. For instance, global acute malnutrition (GAM) rose to around 40% in Southern Somalia during the famine in 2011, where an estimated 258,000 deaths occurred, over half of which were children (Checchi and Robinson, 2013). The prevalence of under-nutrition is highest in rural areas, particularly on commercial farms and in informal (urban and peri-urban shack) settlements. HIV Contributes to an increased prevalence and severity of under-nutrition and micronutrient deficiency in children. More than 50% of children with HIV-infection become stunted or underweight; and at least 1 in 5 develop wasting (HST, 2007).

Malnutrition contributes to between 35 and 55 percent of all childhood deaths. In acute emergency situations, malnutrition can account for even more. There are currently a number of classification systems related to nutrition related emergencies, most including reference to crude mortality rate
(CMR), under-five mortality rate (U5MR), and levels of acute malnutrition. The WHO classification system below provides simple guidance using thresholds for rates of global acute malnutrition (GAM). These thresholds are a reasonable starting point in assessing the severity of a crisis. (WHO, 2003) In the world, annually, over three million deaths occur from protein energy malnutrition (PEM) in the children under five (Stephan et al., 2000). Currently, 195 million under-five children are affected by malnutrition; 90% of them live in sub-Saharan Africa and South Asia. At least 20 million children suffer from severe acute malnutrition and another 175 million are undernourished (Black et al., 2008).

Global acute malnutrition in south sudan under-five children

South Sudan is a country where a brutal civil war has displaced millions of people, destroyed basic services, increased disease and exacerbated hunger and this has made malnutrition a chronic problem in South Sudan. According to World Food Programme (WFP, 2015) report, "every two minutes in South Sudan, another child becomes severely malnourished hence rates of Global Acute Malnutrition (GAM) are alarmingly high in the country. The scourge is well above the emergency threshold of 15 percent in most parts of the country, especially in the Greater Upper Nile States, Warrap and Northern Bahr el Ghazal and about a quarter of a million children have been reported to be severely malnourished (WFP, 2015); a recent report by the United Nations Children’s Fund (UNICEF) (Voice of America (VOA), 2016) specifically submitted that seven out of the 10 states in South Sudan have reached the emergency threshold of 15 percent global acute malnutrition, while in Northern Bar el Ghazal the malnutrition rate is 33 percent. Tens of thousands of South Sudanese children under the age of five have remained at the risk of malnutrition-related death in spite of temporary improvements in the food security situation as reported by the Integrated Food Security Phase Classification (IPC) group of experts (UNICEF, 2014).

Unfortunately, high rates of disease, lack of safe water and lack of access to basic health care have actually hampered efforts being made to reduce malnutrition among under-five children through improvements in food security (UNICEF 2014). Diarrhoea and other illnesses prevent children from absorbing nutrients, so even in places where there is improved access to food; children can still be dangerously malnourished and those in conflict-affected areas, especially the 1.4 million people who are internally displaced – more than half of whom are children – are the most at risk (UNICEF, 2014).

Methodology

**Study type:** This study is a retrospective cohort study, with data collection from the District Health Information Software (DHIS) of the Republic of South Sudan. Data from three counties across three years-2015, 2016 and 2017 were obtained.

**Study setting:** This study was conducted across three counties in Western Lakes state of South Sudan. They include Cueibet, Rumbek North and Yirol West counties.

**Study population:** The study populations were the under-five children with either Severe Acute Malnutrition (SAM) or Moderate Acute Malnutrition (MAM), diagnosed by measuring Middle Upper Arm Circumference (MUAC) using MUAC tape.

**Sampling frame:** The sampling frames for the study are the eight counties (8) counties in the Lakes state, one of the major ten states of South Sudan. This study focused on three counties where nutrition therapy programme for under-five children is being implemented for three years 2015-217.

**Data collection:** Data was obtained from the District Health Information Software (DHIS) of South Sudan.

**Data analysis:** Data analysis was done using the Statistical package for Social Science (SPSS) version 21. Friedman Analysis of Variance (ANOVA) was used to compare SAM and MAM Middle Upper Arm circumference (MUAC) values of under-five Children across the three years in each of the three counties, while Wilcoxon Signed Rank Test was used as post hoc analysis for Friedman ANOVA comparison of MUAC values for SAM and MAM across the three years. Kruskal Wallis was used to test for comparison of under-five children MUAC values for SAM and MAM across the three counties (in general), while Man Whitney U Test was used as the post hoc analysis for Kruskal
Wallis of MUAC values for SAM and MAM of under-five children across the three counties in the three years- 2015, 2016 and 2017. Statistical level of significance was set at P-value <0.05.

**Ethical considerations:** An approval to conduct the study was obtained from Health Research Ethics Committee of the State Ministry of Health (SMoH) of Lakes state in South Sudan, with endorsement of the Director General of the ministry.

**Results**

A total of 36 months data for SAM and MAM prevalence were extracted from the District Health Information Software (DHIS), for each of the three counties, across the three years-2015, 2016 and 2017.

**Table 1.** Friedman ANOVA comparison of SAM middle upper arm circumference of under five children across years 2015, 2016 and 2017 in each of the three counties

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Chi-Square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>Median (MUAC)</td>
<td>Median (MUAC)</td>
<td>Median (MUAC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cueibet</td>
<td>134.00</td>
<td>315.00</td>
<td>200.00</td>
<td>5.167</td>
<td>0.076</td>
</tr>
<tr>
<td>Rumbek N.</td>
<td>18.00</td>
<td>27.00</td>
<td>51.00</td>
<td>8.167</td>
<td>0.017*</td>
</tr>
<tr>
<td>Yirol W.</td>
<td>45.00</td>
<td>71.50</td>
<td>243.50</td>
<td>0.500</td>
<td>0.779</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above revealed a significant difference in SAM MUAC values of Rumbek North County only, across the three years. It also showed a rising median values across the three years in the three counties.

**Table 2.** Wilcoxon Signed Rank Test post hoc analysis for Friedman ANOVA comparison for SAM MUAC across years 2015, 2016 and 2017

<table>
<thead>
<tr>
<th>County/Time Period</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumbek North</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 vs 2016</td>
<td>0.863</td>
<td>0.388</td>
</tr>
<tr>
<td>2015 vs 2017</td>
<td>2.511</td>
<td>0.012*</td>
</tr>
<tr>
<td>2016 vs 2017</td>
<td>1.490</td>
<td>0.136</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above revealed that, the significant difference of SAM MUAC values in Rumbek North was between the 2015 and 2017.

**Table 3.** Friedman ANOVA comparison of MAM middle upper arm circumference of under five children across years 2015, 2016 and 2017 in each of the three counties

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Chi-Square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>Median (MUAC)</td>
<td>Median (MUAC)</td>
<td>Median (MUAC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cueibet</td>
<td>67.50</td>
<td>409.50</td>
<td>344.50</td>
<td>10.50</td>
<td>0.005*</td>
</tr>
<tr>
<td>Rumbek N.</td>
<td>43.50</td>
<td>70.00</td>
<td>103.00</td>
<td>6.50</td>
<td>0.039*</td>
</tr>
<tr>
<td>Yirol W.</td>
<td>72.50</td>
<td>143.50</td>
<td>654.50</td>
<td>17.167</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above showed significant differences in MAM MUAC values in each of the three counties across the three years. It also showed a rising median values in Rumbek North and Yirol west across the three years.
Table 4. Wilconxon signed rank test post hoc analysis for friedman ANOVA comparison for MAM MUAC across three years 2015, 2016 and 2017

<table>
<thead>
<tr>
<th>County/Time Period</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cueibet</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 vs 2016</td>
<td>1.465</td>
<td>0.075</td>
</tr>
<tr>
<td>2015 vs 2017</td>
<td>2.353</td>
<td>0.019*</td>
</tr>
<tr>
<td>2016 vs 2017</td>
<td>-0.157</td>
<td>0.875</td>
</tr>
<tr>
<td><strong>Rumbek North</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 vs 2016</td>
<td>1.569</td>
<td>0.117</td>
</tr>
<tr>
<td>2015 vs 2017</td>
<td>2.589</td>
<td>0.010*</td>
</tr>
<tr>
<td>2016 vs 2017</td>
<td>1.020</td>
<td>0.308</td>
</tr>
<tr>
<td><strong>Yirol West</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 vs 2016</td>
<td>1.726</td>
<td>0.084</td>
</tr>
<tr>
<td>2015 vs 2017</td>
<td>3.059</td>
<td>0.002*</td>
</tr>
<tr>
<td>2016 vs 2017</td>
<td>2.981</td>
<td>0.003*</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above revealed that, the significant difference in MAM MUAC values, across the three years in Cueibet, is between 2015 and 2017, in Rumbek North is between 2015 and 2017, and in Yirol West is both between 2015 and 2017, and between 2016 and 2017.

Table 5. Kruskal Wallis Test comparison of under-five children SAM and MAM MUAC across the three counties (In general)

<table>
<thead>
<tr>
<th>County</th>
<th>SAM (n=36)</th>
<th>Rumbek N. (n=36)</th>
<th>Yirol West (n=36)</th>
<th>H</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cueibet</strong></td>
<td>Median</td>
<td>Median</td>
<td>Median</td>
<td>12.933</td>
<td>0.002*</td>
</tr>
<tr>
<td>2015</td>
<td>134.00</td>
<td>18.00</td>
<td>45.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>315.00</td>
<td>27.00</td>
<td>71.00</td>
<td>25.891</td>
<td>0.001*</td>
</tr>
<tr>
<td>2017</td>
<td>200.00</td>
<td>51.00</td>
<td>243.50</td>
<td>19.344</td>
<td>0.001*</td>
</tr>
<tr>
<td><strong>MAM</strong></td>
<td>Median</td>
<td>Median</td>
<td>Median</td>
<td>3.090</td>
<td>0.213</td>
</tr>
<tr>
<td>2015</td>
<td>67.50</td>
<td>43.50</td>
<td>72.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>409.50</td>
<td>70.00</td>
<td>143.00</td>
<td>20.701</td>
<td>0.001*</td>
</tr>
<tr>
<td>2017</td>
<td>344.50</td>
<td>103.00</td>
<td>654.50</td>
<td>16.740</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above showed that, there are significant differences in SAM MUAC values, among the three counties, across the three years-2015, 2016 and 2017. It also showed significant differences in MAM MUAC values, among the three counties in 2016 and 2017.

Table 6. Man whitney U test post hoc analysis of SAM and MAM MUAC of under-five children across the three counties in 2015, 2016 and 2017

<table>
<thead>
<tr>
<th>County</th>
<th>Z score</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAM 2015</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cueibet vs Rumbek North</td>
<td>-2.890</td>
<td>0.004*</td>
</tr>
<tr>
<td>Cueibet vs Yirol West</td>
<td>-1.559</td>
<td>0.119</td>
</tr>
<tr>
<td>Rumbek North vs Yirol West</td>
<td>-3.062</td>
<td>0.002*</td>
</tr>
<tr>
<td><strong>SAM 2016</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cueibet vs Rumbek North</td>
<td>-4.158</td>
<td>0.000*</td>
</tr>
<tr>
<td>Cueibet vs Yirol West</td>
<td>-4.042</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Rumbek North vs Yirol West</td>
<td>SAM 2017</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Cueibet vs Rumbek North</td>
<td>-3.984</td>
<td>0.000*</td>
</tr>
<tr>
<td>Cueibet vs Yirol West</td>
<td>-.404</td>
<td>0.686</td>
</tr>
<tr>
<td>Rumbek North vs Yirol West</td>
<td>-3.580</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

*indicates significant difference at α = 0.05

The table above revealed that the existing significant differences of SAM MUAC in under-five children, are among the three possible combinations of the three counties (Cueibet vs Rumbek North, Cueibet vs Yirol West, and Rumbek North vs Yirol West) across three years except in 2015 SAM MUAC and 2017 SAM MUAC between Cueibet and Yirol West. It also showed significant differences in MAM MUAC among the three possible combinations of the counties, across 2016 and 2017.

**Discussion**

This study aimed to determine the impact of nutrition therapy programme on the prevalence of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) in three counties of war-torn Lakes State of South Sudan. In the results, and considering each county, there was a significant difference in SAM prevalence of Rumbek North County only, across the three years 2015, 2016 and 2017. It was also discovered that, there was a rising median values of SAM across the three years in the three counties the post-hoc analysis further revealed that the significant difference of SAM prevalence in Rumbek North was between the 2015 and 2017.

The possible reasons for these significant differences, in conjunction with rising median values of SAM prevalence (poor outcome) across the three counties, were as suggested by the report of a similar study (Mwanza et al, 2016) on the outcome of the Outpatient Therapeutic Program (OTP), which is the nutrition therapy programme for SAM cases of under-five children, in three districts of eastern province in Zambia. These include; dependence on donor-funds, consistent stock outs of ready-to-use therapeutic food and other supplies, high volunteer dropout, and inadequate monitoring and feedback on defaulters, all of which are applicable in the three counties under this study.

Taking the MAM prevalence into consideration, the result revealed significant differences in each of the three counties across the three years. It also showed a rising median values of MAM prevalence (poor outcome) in Rumbek North and Yirol west across the three years. The result of the post-hoc analysis further revealed that, the significant difference in MAM prevalence, across the three years, in Cueibet and Rumbek North is between 2015 and 2017, while in Yirol west are both between 2016 and 2017, and between 2016 and 2017. This may be attributed to possible reasons, as suggested by Neitzel (2011) in a study conducted in five regions in Ethiopia (Tigray, Afar, Amhara, Oromia and SNNPR), to determine the impact of Targetted Supplementary Feeding Programme (TSFP), which is the therapeutic program for MAM cases in under-five children, across five years, 2007-2011. The study suggested large proportion of children enrolled were not acutely malnourished, poor compliance, which is food sharing among other non-malnourished children, and increased food insecurity during the follow-up, all of which are closely applicable in the context of this study, as possible reasons.

Considering the relationship among the three counties, the results of this study showed that, there are significant differences in SAM prevalence, among the three counties, across the three years-2015, 2016 and 2017. It also showed significant differences in MAM prevalence, among the three counties in 2016 and 2017. The post-hoc analysis further revealed that, the existing significant differences of
SAM prevalence in under-five children, are among the three possible combinations of the three counties ( Cueibet vs Rumbek North, Cueibet vs Yirol West, and Rumbek North vs. Yirol West) across three years except in 2015 SAM and 2017 SAM between Cueibet and Yirol West.

The results of this study also showed significant differences in MAM prevalence among the three possible combinations of the counties, across 2016 and 2017. The significant differences in SAM prevalence among the three counties, in the three possible combinations, across the three years, and MAM prevalence among the three possible combinations, among the three counties, across 2016 and 2017, may not be unconnected with the fact that, each county do not get supplies of the food supplements in the same simultaneous periods and that the differences in the distances, in conjunction with variations in the non-pliability of the roads to each county, for food supplement distribution, may be responsible reasons. Additional factors like the variations in diagnosis according to standard by the Community Nutrition Volunteers (CNVs) and Community Health Workers (CHWs) in each county using MUAC tapes, and political sentiments in health policy implementation as it relates to nutrition therapy programme, may also be responsible for these significant differences.

**Conclusion**

The results obtained from this study do not support the null hypotheses of the study. The first null hypothesis states that, there will be no significant differences in the prevalence of SAM and MAM among under-five children in each of the three counties, across the three years in Lakes State of south Sudan. The results of this study showed conspicuous significant differences in SAM and MAM prevalence in each county across the years. Factors recognized for the significant differences in SAM and MAM values, coupled with poor intervention outcome, ranges from dependence on donor-funds, consistent stock outs of ready-to-use therapeutic food and other supplies, high volunteer dropout, inadequate monitoring and feedback on defaulters, to large proportion of children enrolled were not acutely malnourished, poor compliance, and increased food insecurity during the follow-up. The second null hypothesis which states that, there will be no significant differences in SAM and MAM prevalence among under-five children in the three counties, across the three years in Lakes State of South Sudan, was also at variance with the results of this study, as there were various significant differences in SAM and MAM prevalence among the three counties, across the three years. The possibility of each county not getting supplies of the food supplements in the same simultaneous periods, the differences in the distances and non-pliability of roads for hitch-free food supplements supply, variations in diagnosis according to standard by CNVs and CHWs in each county using MUAC tapes, and political sentiments in health policy implementation as it relates to nutrition therapy programme, were suggested as possible reasons for these significant differences, and poor impact.

In overall, this study has shown that, despite the various interventions of international organizations, like United Nations Children Emergency Fund (UNICEF) as the major donor for OTP programme for SAM cases, and World Food Programme (WFP) as the major donor for TSFP programme, for MAM cases, in south Sudan, with the duo working in collaboration with other International Non-governmental Organizations (INGOs), to implement nutrition therapy programme, the impact of the programme in the three counties, in Lakes State of south Sudan, as revealed in this study, is still at abysmal level. Complete overhaul of the programme, including training and re-training of CNVs and CHWs for correct screening, timely availability of food supplements, enactment of every possible policy to ensure food security, unwavering adherence to the principle of neutrality and impartiality on the part of INGOs and government, and conduct of pre and post-intervention surveys to communicate feedbacks, and help in re-evaluations, may serve as the panacea towards the present unsatisfactory state of the nutrition therapy programme in the Western Lakes State of south Sudan.

**References**


and relative weight gain during early life with adult health and human capital in countries of low and middle income: findings from five birth cohort studies. *Lancet*, 382, 525-34.


[18.] WFP (2015). UNICEF And WFP resolve to defeat malnutrition in South Sudan


Texila American University,
Lot 2442, Plantation Providence,
East Bank Demerara (EBD),
Guyana, South America.

GLOBAL OFFICE
Texila Educational & Management Services (P) Ltd,
Module 310, III Floor, TIDEL Park,
ELCOT-SEZ,
Aerodrome Post, Coimbatore-641014,
Tamil Nadu, India.
E-mail: ejournal.assist@tau.edu.org
Skype: texila.aco32
Whatsapp: +918056580933