Qualitative Study on Barriers and Supportive Factors of Maternal, Neonatal and Child Health (MNCH) Services in Homa Bay County, Kenya

Article by Godfrey Yikii[1], Isaac Mwanzo[2], George O. Ochieng[3], John Paul Oyore[4], Lucy K., Ogollah[5], Peter Okoth[6], Bridget job-Johnson[7]
[5]*School of Public Health, Kenyatta University*
[6,7]*Governance Facility, Decentralization and Citizens Participation Partnership (DCPP)*
Governance Facility
E-mail: godfrey.yikii@dcppng.org[1]

Abstract

Introduction: Despite overall global progress and concerted efforts, MDGs 4 (reduce child mortality) and 5 (improve maternal and new born health) have been and are seriously off target for many countries. In Africa, south of the Sahara a woman has a 1 in 39 chance of dying in pregnancy or childbirth, compared to a 1 in 3,800 similar risk in developed countries. The leading causes of maternal deaths are related to obstetric complications around the time of childbirth, with three-quarters of those deaths and significant morbidity being preventable through access to a full continuum of quality reproductive health services. Evidence shows that Africa still has the highest proportion of under-five deaths, with 1 in 91 children dying before their fifth birthday (UNICEF, 2016).

Aim: To explore experiences, knowledge, beliefs, practices and attitudes of caregivers and community members associated with the causes of common childhood illnesses, prevention and treatment options.

Materials and Methods: The study adopted qualitative approaches grounded in social and health promotion theories (Berkowitz, 2004; Rosenstock, 1966; Bradley et al., 2009). Maximum variability, in combination with sampling designs employed to capture a diversity of perspectives.

Results: The study findings identified the most common childhood illnesses as; malaria, diarrhoea, measles, coughs, and colds related to increased cases of child and infant mortality. Pneumonia was rarely cited, the fear of HIV and cancer tests mentioned as key barriers of early initiation and continued use of ANC services. Side effects of vaccines prevent mothers from having their children vaccinated.

Conclusion: This study provides a contextual and evidence-based approach for the design of MNCH interventions that are effective, user-friendly and more likely to elicit optimum participation from the targeted community members in Homa Bay County.

Keywords: MNCH services, MDG 4 and 5, uptake, barriers, children/pregnant women, Homa Bay.

Introduction

Maternal mortality and child mortality rates in Kenya are very high. Reports indicate that Maternal Mortality Rate (MMR) stands at approximately 488 maternal deaths per 100,000 live births (KNBS 2010). The unacceptably high rate of maternal deaths has not significantly improved in over 15 years. The MDG 5 target of reducing maternal mortality to 175 maternal deaths per 100,000 live births or less by 2015 remained distant and unlikely to be achieved in Kenya. While under-five child survival improved, neonatal survival has not. Kenya's neonatal mortality rate, estimated at 31 per 1,000 live births, comprises 60% of infant mortality rate (IMR) up from 45% in 2003; the infant and child mortality rates are 52 and 74 per 1,000 live births respectively. Many factors continue to contribute to this high level of maternal mortality, including malaria, diarrhoea and pneumonia (KNBS 2010; KDHS 2003, 2009). The government of Kenya worked with all the teams on implementing the study. Nevertheless, access to and utilization of services such as family planning, antenatal care and skilled delivery at birth is still low in most of these settings (Birmeta 2013; Zureick-Brown et al., 2013; AU Report 2012; WHO, UNICEF, UNFPA and the World Bank,2012 ; Lozano et al.,2011 ; UNDP 2010; UNICEF 2010; Kirkwood et al., 2008). The leading causes of under-five mortality include preventable illnesses such as pneumonia, diarrhoea, malaria, and neonatal complications.

Barriers to Seeking ANC Services at Health Facilities: Access and utilization of ANC services is a complex phenomenon that is explained by a compendium of factors including economic, cultural, social, geographic, organizational, and psychological attributes of the woman such as, poor communication between women and Health Facility (HF) staff; fear of screening tests for HIV and Cancer; travel and waiting time at HFs; fear of public condemnation for the young mothers; operation hours of facility; perceived lack of privacy and confidentiality; gender of the health provider and not being in possession of a clinic card are some of the barriers that remain.

Methods

Description of site: The study was conducted in three sub counties of Homa Bay County: Ndhiwa, Mbita and Homa Bay. The sub counties were selected as representative of the county following a thorough review of relevant indicators. Data was generated mainly from a total of 38 FGDs involving mothers of under-fives, married men and Community Health Workers). In addition, 20 Key Informants (KIs) including County health staff and Health facility in-charges were included in the study to gather their views on access to MNCH services and underlying challenges.

Complimented by a series of In-depth Interviews (49) involving Community Health Extension Workers, religious leaders (11), Chiefs/village elders (12), opinion leaders (7) and poor users of healthcare services (8) were carried out. The data was captured by use of written notes and tape recording. For analysis, data captured by voice recorders were transcribed and the written notes organized thematically. The transcribed data was imported into NVivo software and analysed guided by a framework approach.

Study design

A cluster sampling is being designed to be comparative, and analytical in nature to determine the UNICEF coverage of maternal, newborn and child health services in Homa Bay County. The study methods included a combination of focus group discussions (38 FGDs), In-depth Interviews (49 IDIs) and Key Informant Interviews (20 KIIs) aimed to understand the socio-cultural and behavioural factors influencing the uptake of MNCH services: immunization; treatment of pneumonia, diarrhoea, and malaria (IMCI/ICCM) and skilled delivery including in-depth analysis to the poor MNCH indicators. Performance of immunization indicators was particularly central to this process. This was replicated multi-stage wise to the sub-location level, where the actual study subjects were identified and recruited.

Choice of design

The Multi-stage purposive sampling designs were adopted in this study. Three sub-counties - Homa Bay, Ndhiwa and Mbita - out of six were purposively selected to represent about 50% of the area covered by the study. Performance of relevant MNCH indicators particularly immunization underpinned the sampling process study design focused on evaluating specific interventions and allows for reduced economy study. However, cluster sampling makes blinding more likely and minimizes the chances of selection and informed bias.

Data source

We used a combination of focus group discussions (FGDs), In-depth Interviews (IDIs) and Key Informant Interviews (KIIs). Set reading of published research material including both present and historical information on MNCH services.

Data collection method

Community members mainly women between 18-49 years and married men comprised the primary study population. The secondary population was composed of community elders and opinion leaders, Community Health Workers, County government health officials (including county and sub county health management teams), health facility in charges community, and health extension workers.

Statistical method

Data collected through voice recorded data; thematic analysis was the major framework for analysis. Transcribed, and notes organized for purposes of comparison. Emerging trends were analysed according

to the research objectives (Ritchie and Lewis 2008; Lock and Scheper-Hughes, 1990). As part of triangulation process, the transcribed data was imported into NVivo software and the analysis guided by a thematic approach. The transcripts further cross-referenced with field notes and complemented by KII and IDI data. The client exit interviews were entered in SPSS, processed appropriately and used only where applicable to corroborate qualitative data.

Ethical consideration

The fact that this work involved legal adult participants implies limited ethical issues, secondary data meant no written consent was sought but as a public health professional, we kept secret all information and due ethical requirement process followed including confidentiality rights. We also kept results available in the study area. All FGD involvement was optional and voluntary.

Results

With the help of the Homa Bay county and UNICEF Kenya team, data collectors, we consulted records, registers and conducted interviews. The analysis below highlights the barriers and supportive factors in the uptake of Maternal and Child Health (MNCH) services in Homa Bay County. The findings are based on 38 focus group discussions with men, mothers of under-fives and CHWs, 20 Key Informant Interviews, 250 exit interviews, 6 in-depth interviews with women who had limited contact with Health facilities (HFs) as well as observations recorded at facilities and opinions sourced from 8 community leaders.

Key study findings

Common childhood illnesses, perception of risk and health seeking behaviour

Most participants mentioned measles, diarrhoea, coughs, malaria and colds as the illnesses that are commonly experienced in the area. Other illnesses such as pneumonia, HIV and AIDS were rarely mentioned except on further probing. Malaria was repeatedly mentioned as the most feared and main killer disease of children. Many respondents attributed causes of childhood illnesses to both biomedical and socio-cultural factors. Actions taken to mitigate the effects of the illnesses range from seeking help from faith healers/religious leaders, herbalists, CHWs to health facilities. Many participants preferred seeking care from both biomedical and traditional sources of care. Many discussants attributed causes of childhood illnesses to socio-cultural and environmental factors. While discussing this topic with men in Mbita, it was argued that most of childhood illnesses are a result of poor hygiene and sanitation practices. Other illnesses could be attributed to breach of community taboos and witchcraft. As one respondent observed, *'It could be a result of breaking taboos, or even witchcraft. For example if the child's father sleeps with other women then comes back to that house, he is not supposed to touch the child before bathing. Breach of this result in the child becoming ill'* (Men FGD in Mbita).

Prevention and treatment of malaria, diarrhoea, and pneumonia

Malaria

Discussion with study subjects revealed that malaria is a term used to encompass a wider range of feverish illnesses. Most study participants associated malaria with mosquito bites. Traditional beliefs around causes were also discussed. A few approaches were mentioned as preventive measures. These included the use of treated nets, ensuring a clean environment and keeping the children warm. Seeking help from religious leaders for divine intervention was also mentioned. The common sources of care cited included community health workers, private providers, shopkeepers and use of herbal preparations. Health facilities were used either after initial attempts at household level or in combination with other methods.

Diarrhoea

Diarrhoea was associated mainly with consumption of dirty food. In some cases, unremitting symptoms are associated with witchcraft or breach of taboos. Maintaining high standards of personal and household hygiene were mentioned as key methods in diarrhoea prevention. Vaccination was rarely mentioned as another preventive measure. On suspicion of symptoms, a mixture of approaches such as

use of herbs, consultation with neighbours and other family members are adopted. A child is only taken to health facilities when initial home-based actions fail to overcome the symptoms. Consultation with herbalists and religious leaders occurs when symptoms fail to respond.

Pneumonia

Study participants associated pneumonia with symptoms such as breathing difficulties. It was perceived to be caused mainly by exposure to cold and in some cases, witchcraft. Most community members were not sure whether pneumonia could be prevented or not. The measures mentioned to prevent pneumonia aimed at behaviour modification. Vaccination was rarely mentioned. Most of the female focus group discussants explained that fear of side effects of vaccines prevent mothers from having their children vaccinated.

In all the FGDs, the fear of HIV and cancer tests was mentioned as key determinants/barriers of early initiation and continued use of ANC services. Information from the health providers indicated deeply rooted religious and cultural beliefs. The perceived causes of childhood illnesses were mainly socio-environmental, and biomedical factors. Whereas the health facilities were mentioned as the first option during illness, most community members sought help after several home treatment attempts.

Benefits of Health Facility Delivery

Over the years, a wide body of knowledge has demonstrated that proper medical attention and hygienic conditions during delivery can reduce the risks of complications and infection that can cause morbidity and mortality to either the mother or the baby. Even though most deliveries occur at home, health facilities (HFs) were associated with a host of benefits. Well-equipped and staffed facilities were rated highly for being able to effectively tackle complications associated with delivery.

Discussion

Designing effective interventions that inspire confidence among women and the community at large to adopt positive behaviour requires an in depth understanding of the prevalent cultural beliefs, attitudes, risk perception and the knowledge they have about what actions to take in the face of an emergency or serious illness incident. The study participants had diverse explanations for the causes of childhood illnesses.

Access and Use of ANC Services and Skilled Birth Attendants

The study revealed several factors at health facility, community and family levels that promote or hinder use of skilled care during pregnancy, and childbirth. Several studies and more recently one conducted by Population Council have pointed out how handling women without respect and dignity drives them away from health facilities.

Immunization

Studies have shown that non-uptake of immunization can be a consequence of acceptance or willingness, cultural/religious beliefs and inability to access immunization services due to attend costs. Even in a system where immunization is free, the indirect costs such as transport and opportunity costs can be a deterrent for some mothers to get their children immunized, despite general acceptance and robust provision of immunization services (Canavatiet al. 2011; Cassellet al. 2006).

Information, Communication and Education Issues

This study explored the sources of information on treatment and vaccination. Community Health Workers emerged as the leading source of information. Other sources mentioned included health facilities, TBAs and community groups. Several channels were mentioned for dissemination of information. Announcements channelled through mobile, community meetings, public service announcements in villages were considered quite effective. Other channels included radio, Information Education and Communication (IEC) materials. The challenge around this is literacy levels among young mothers. Most of them stop at primary level education but use of user-friendly innovative tools to reach remains critical.

Male Involvement in Health Care

In recent years male involvement in the care of women during pregnancy and delivery continues to draw a lot of interest as its connected to better health outcomes. During the FGDs, discussions on help offered by men during pregnancy, delivery and child illness focused mainly on financial support. Overall, while men can be involved at different stages of care seeking, their role remains marginal except when the condition becomes critical. A host of studies have raised concern over the unenthusiastic participation of men in care seeking, Community management childhood illnesses, leading to unchanging poor MNCH indicators (Kimathi 2014; Robbles et al 2010; Baggaley et al., 2000; Drennan, 1998). This needs to be addressed.

Policy Implications

The Government of Kenya is committed to achieving MDGs 4 (reduce child mortality) and 5 (improve maternal and newborn health) and SDGs and has incorporated them into its maternal and newborns health framework for development and multi-sectoral collaboration. Kenya and other African Union members have adopted the road map for accelerating the attainment of MDGs 4 and 5; a health sector strategy to provide efficient and high quality newborns services based on six pillars of maternal and newborns health. Operational policies and plans for SDGs are at implementation stages for reducing maternal, prenatal and neonatal morbidity and mortality.

Insights from Global Evidence

Overwhelming evidence from more recent meta-analysis and systematic review by O'Mara-Eves et al., (2015)71 identified trends in the effectiveness of interventions that can be considered in designing interventions; Interventions that engage community members in the delivery of the intervention are particularly effective (compared with interventions that empower the community or involve members in the design of intervention); Single component interventions tend to be more effective than multi-component interventions for health behaviour outcomes.

Both universal and targeted interventions are effective, although universal interventions tend to have higher effect size estimates for health behaviour outcomes; Interventions that employed skill development or training strategies, or which offered contingent incentives, tended to be more effective than those employing educational strategies for health behaviour outcomes.

Interventions involving peers, community members, or education professionals tended to be more effective than those involving health professionals for health behaviour outcomes; Shorter interventions tended to be more effective than longer interventions for health behaviour outcomes, although this is probably confounded by levels of exposure or intensity of contact with the intervention deliverer and interventions tended to be most effective in adult populations and less effective in general populations (i.e. those that included all age groups) for health behaviour outcomes.

Opportunities for future scope of study

The research work provides a contextual and evidence-based approach for the design of a robust MNCH intervention and tools to create demand for services and will be an important source of literature for future scholars. Creating awareness and changing attitudes is reason for this baseline study, the study has several advantages as it contains vital information regarding the response of the people towards the uptake of MNCH services in Homa Bay County.

Conclusion

At the end of the study, we attained most of our objectives; the study concluded that Malaria, diarrhoea and pneumonia are some of the common illnesses that contribute to suffering among the study subjects. While most study subjects displayed better understanding of causes and prevention of malaria and diarrhoea, this was not the case for pneumonia. Malaria was reported as the main child killer disease. Health facilities are used when several initial attempts to alleviate symptoms fail to work. Increased use of immunization services is inhibited by a host of socio-cultural and religious factors, in addition to accessibility barriers.

Most community members are not aware of diseases targeted by vaccination including recently launched vaccines for pneumonia and diarrhoea. Socio-religious and traditional methods are applied to curb unremitting symptoms and threats to child health and pregnancy that are perceived to have a social origin. Most women do not attend ANC owing to reasons such as fear of being tested for HIV and AIDS; accessibility barriers and poor health provider-client interactions. Preparations for child birth among the study subjects conform to prevalent socio-cultural beliefs; that this could invite misfortune

Most health facilities in the county do not have the requisite equipment, supplies, and personnel to offer timely and adequate services. Whereas women play a role in decision making when a child is unwell or around delivery time, men still hold power over matters of finances. For most of the community members, CHWs constitute a key source of information on MNCH services. Similarly, there appears to be lack of knowledge about basic MNCH prevention options.

Difficulties

This study encountered a few challenges during data collection and efforts were made to overcome these bottlenecks. For instance, owing to low literacy most of the data was collected in local language. The main challenge we faced was security limitations to access remote locations; Unavailability of study participants in the households.

Limits of the study

To minimize data errors, this was mitigated through careful tool translation to dholuo; pre-testing of the data collection tools; and use of local Research Assistants and transcribers competent in local language. Used triangulation approach provided the rigor required to obtain reliable results. The study was carried during rainy season which made some of the sturdy sites inaccessible. To overcome this problem, study subjects were selected in such a way that a point of saturation was achieved.

Recommendations

The following recommendation is for the improvement of the MNCH services in Homa Bay Country. Kenya Ministry of Health (SRHB) need to invest in health intervention strategies that rely on robust evidence base, and knowledge management to best inform programme policy. There is need to develop as well as support sustainable referral system policies at the county level that foster smooth relationships between level 1 clinics and other levels to increase access and use of MNCH services.

To design interventions that promote hygiene, sanitation, safe drinking water, and the importance of ORT in the management of diarrhoea in under-fives, use of insecticides treated nets and HIV prevention.

For better management of diarrhoea there is need for HFs to establish well equipped ORT corners. Design interventions that target to increase capacity of community members to recognise danger signs in pregnancy, newborns and children including Infant and Young Child Feeding. Target Community leaders to mobilize women for appropriate care; Develop interventions that promote culturally sensitive forms of birth preparedness and to allow free discussion at family/community levels.

Design interventions that counter myths, religious and cultural beliefs. Promote interventions that address the benefits of immunization timing of different vaccines. County Health Management Teams needs to invest not only in quantitative, routine data collection systems but also in continuous qualitative and other forms of research to determine context specific factors that catalyse or continue to stall improvements in key indicators.

Results from monitoring and evaluation of performance among key indicators needs to be shared in appropriate forums that bring together key stakeholders and partners in the county to inform policy direction; identify high impact activities and scale-up best practices on MNCH services including carefully designed and a culturally sensitive communication strategy to facilitate information flow through relevant local forums such as public barazas, funerals, dialogue groups should be an investment. The data generated was used to generate baseline report to inform MNCH response plans and implementation for government, partners and NGOs. In addition, findings were used to inform the SBCC strategy development and Information, Education and Communication (IEC) resource materials for creating demand on MNCH services.

Figures, charts, and tables

The descriptions of the charts and tables below represent the selected MNCH indicators for Homa Bay County both baseline and Target at study.

Table 1.0. Types and number of interviews and FGDs

Data collection technique	Category of participants	Number of participants / Groups
Health Facility/county/sub county level		
Exit surveys*	Mothers attending MNCH services	252
KII	County/sub county/facility in charges staff	20
In depth interviews	CHEWs	11
Community level		
FGDs	Older mothers (over 26 yrs.)	10
	Young mothers (between 18-26 years)	12
	Men	8
	CHW	8
In-depth interviews	Non-users of MNCH	8
	Opinion leaders	7
	Chiefs/village elders	12
	Religious leaders	11

Sample size for Exit Interviews was determined using Fisher et al., 2003 using immunization coverage for Homa Bay (67%) - ICCM/KEMRI/UNICEF 2013 Report

Table 2.0. Selected Sub-Counties (Highlighted)

Homa –Bay County		
	Sub-county	**Full Immunisation Coverage**
1	Homa Bay	67.9
2	Rachuonyo South	72.5
3	Mbita	63.0
4	Suba	65.8
5	Rachuonyo North	70.7
6	Ndhiwa	59.3

Source: Homa Bay- ICCM/KEMRI/UNICEF 2013.

Table 3.0. Comparison of selected national and county indicators (KDHS, 2014)

No.	Indicator	Homa Bay County	National
1	Fertility	5.2%	3.9%
2	CPR (Any Method)	46.7%	58%
3	Infant Mortality	-	39 per 1,000
4	Under five Mortality	-	52 per 1,000
5	Skilled birth attendance	(42)60.4%	62%
6	Health facility delivery	61.9%	61%
7	Full Immunization Coverage (FIC)	(74%) 53.7	68

Table 4.0. Selected MNCH Indicators

Indicator	Baseline -2013	Target- 2018
ANC- 4 visits	40.9%	80%
SBA	42%	65%
Fully Immunized Children	76%	90%
Exclusive Breast Feeding	35%	Not indicated
LLINs coverage	87%	100%
Diarrhoea treatment in children in under fives	20%	70%
Pneumonia treatment in under fives	45%	70%
HIV testing in HFs	48%	100%
Cancer Screening	1%	50%

Acknowledgements

References

[1]. African Union (2012). Status Report on Maternal, New Born and Child Health.

[2]. Berggren W.L, and Wray JD. (2002). Positive deviant behavior and nutrition education. Food Nutr Bull 2002;23(suppl 4):9-10.

[3]. Berkowitz A. D. (2004) The Social Norms Approach: Theory, Research, and Annotated Bibliography

[4]. Birmeta Kidist, Yohannes Dibaba and Desalegn Woldeyohannes (2013): Determinants of maternal health care utilization in Holeta town, central Ethiopia: BMC Health Services Research 2013, 13:256 doi:10.1186/1472-6963-13-256

[5]. Bradley Elizabeth H, Leslie A Curry, Shoba Ramanadhan, Laura Rowe, Ingrid M Nembhard and Harlan M Krumholz (2009): Research in action: using positive deviance to improve quality of health care: Implementation Science 4:25

[6]. Bryan (2008). Social Research Methods. New York: OUP.Carlsen Benedicte and Claire Glenton (2011) What about N? A methodological study of sample-size reporting in focus group studies. BMC Medical Research Methodology 2011, 11:26.

[7]. Carpenter, Christopher J. (2010). "A meta-analysis of the effectiveness of health belief model variables in predicting behavior". Health Communication 25 (8): 661–669

[8]. Glanz, Karen; Barbara K. Rimer, K. Viswanath (2008). Health behavior and health education: theory, research, and practice. (4th Ed.). San Francisco, CA: Jossey-Bass. pp. 45–51.

[9]. Glanz, Karen; Bishop, Donald B. (2010). "The role of behavioral science theory in development and implementation of public health interventions". Annual review of public health 31: 399–418.

[10]. Guest, G.K.M, Macqueen and E. Namey (2012). Applied Thematic Analysis. Thousand Oaks, CA: Sage

[11]. Hahn, R.A and M.C. Inhorn (Eds) (2009). Anthropology and Public Health: Bridging differences in culture and society. Oxford: OUP.

[12]. Kenya Demographic and Health Survey (2008-2009) Report.

[13]. Kirkwood, BR et al., (2008): Developing community-based intervention strategies to save newborn lives: lessons learned from formative research in five countries; Journal of Perinatology 28:2–8

[14]. Lozano R et al., (2011). Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis, Lancet 2011, 378(9797):1139–1165.

[15]. Marsh D.R, Sternin M, Khadduri R, Ihsan T, Nazir R, Bari A, et al (2002). Identification of model newborn care practices through a positive deviance inquiry to guide behavior change interventions in Haripur, Pakistan. Food Nutrition Bulletin 2002; 23(suppl 4):109-18.

[16]. McLeroy KR, Bibeau D, Steckler A, Glanz K (1988). An ecological approach on health promotion programs. Health Educ Q. 15:351–377.

[17]. Newes-Adeyi G, Helitzer DL, Caulfield LE, Bronner Y. (2000). Theory and practice: applying the Ecological model to formative research for a WIC training program in New York State. Health Educ Research. 15:283–291.

[18]. Pope C, S. Ziebland and N. Mays (2009). Qualitative Research in Health Care. BMJ, 320 (7227), 114-116.

[19]. Ritchie J.and J. Lewis (2008). Qualitative Research Practice. Thousand Oaks, CA: Sage.

[20]. Ritchter, M. (2008). Global Health: Why cultural perceptions, social representations and biopolitics matter. Tucson: University of Arizona Press.

[21]. Rosensck, Irwin M.; Strecher, Victor J., Becker, Marshall H. (1988). "Social learning theory and the health belief model". Health Education & Behavior 15 (2): 175–183.

[22]. Rosenstock, Irwin M.; Strecher, Victor J., Becker, Marshall H. (1988). "Social learning theory and the health belief model". Health Education & Behavior 15 (2): 175–183.

[23]. Sternin J, and Choo R 2000): The power of positive deviancy. An effort to reduce malnutrition in Vietnam offers an important lesson about managing change. Harv Bus Rev 2000, 78:14-25.

[24]. Stewart DW, Shamdasani PN, Rook DW (2007): Focus Groups. Theory and Practice. Thousand Oaks: Sage Publications.

[25]. UNICEF (2012). Pneumonia and Diarrhea: Tackling the deadliest diseases for the world's poorest children, New York.

[26]. United Nations (2012). Every Woman, Every Child; UN Commission on increasing commodities for women and children. Implementation Plan. UN; New York.

[27]. Walker L.O, Sterling B.S, Hoke M.M, Dearden K.A (2007). Applying the concept of positive deviance to public health data: a tool for reducing health disparities. Public Health Nurs 2007, 24:571-576.

[28]. WHO, UNICEF, UNFPA and the World Bank (2012): Trends in maternal mortality: 1990 to 2010: Estimates developed by WHO, UNICEF, UNFPA and The World Bank.

[29]. WHO/UNICEF (2010). Countdown to 2015 Decade Report (2000–2010) with country profiles: Taking stock of maternal, newborn and child survival. Geneva.