

NURSES' PERCEPTION ABOUT THE IMPLEMENTATION OF FOCUSED ANTENATAL CARE SERVICES IN DAR ES SALAAM, TANZANIA

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ABSTRACT

A number of countries in Africa, including Tanzania, have introduced focused antenatal care (FANC) as an approach to improve maternal and child health-care services and decrease the high rate of maternal deaths. The purpose of this study was to determine the perception of nurses with regard to the implementation of FANC in practice. A quantitative descriptive design was used to determine how the implementation of FANC guidelines was perceived by nurses who provided midwifery services in Tanzania. A questionnaire was used to collect data. Stratified random sampling was used to recruit 143 nurses, comprising nursing officers (n=50), midwives (n=53), and public health nurses (n=40). The SAS/Basic and SAS/STAT version 11.1 statistical analysis programs were used to analyse data and compile descriptive statistics. Cronbach's coefficient of reliability was 0.86. The results revealed that the greatest area of concern (73.8%, n=104) was the shortage of human and material resources for the successful implementation of FANC. However, there was a positive perception about the implementation and the outcome of FANC services by 98.6 percent (n=141) of the respondents. Authorities and management of these services need to attend to and review the human and non-human resource allocation budgets.

Keywords: antenatal care, focused antenatal care, implementation of focused antenatal care, midwifery in Tanzania, nurses' perceptions of focused antenatal care

INTRODUCTION

Antenatal care (ANC) is one of the pillars of the Safe Motherhood Initiative (WHO, 2009:1). It provides a chance for nurses to interact with pregnant women and enable them to make appropriate choices and decisions that will contribute to optimum pregnancy and neonatal outcomes. Anya, Hydar and Jaiteh (2008:2) report that a lack of effective ANC services was an important risk factor contributing to maternal deaths in Ethiopia, India, Nigeria, Senegal and Zimbabwe. Although ANC remains one of the best strategies to improve maternal health and reduce maternal and neonatal mortality and morbidity rates, critics argue that it is not based on scientific evidence and cannot claim to meet the real needs of pregnant women (Anya et al, 2008:3). During 2001, the World Health Organisation (WHO, 2009:3) adopted a model to structure a maternal and neonatal health programme known as 'focused antenatal care' (FANC). This model emphasises the quality, rather than the quantity of antenatal visits managed by competent midwives. Antenatal care was noted to refer to a wide range of basic medical and nursing procedures carried out during pregnancy for safe childbirth. However, FANC brings in the critical aspect of linking such care with the detection and treatment of causes of maternal mortality by a skilled birth attendant. Another important aspect brought about by the introduction of FANC was the goal-directed intervention of awareness of birth preparedness and complication readiness by women (Ekabua, Ekabua & Njoku, 2011:1).

Tanzania's Ministry of Health developed a strategic plan to reduce maternal, newborn and child deaths in line with Millennium Development Goals 4 and 5 (Ministry of Health and Social Welfare of Tanzania, 2008:1). One of the operational targets was to increase the percentage of pregnant women attending at least four FANC visits from 64 percent to 90 percent by 2015. During 2002, FANC services were implemented in Tanzania to improve maternal and child health services (Ministry of Health and Social Welfare of Tanzania, 2008:1). Early ANC booking (ranging from 4 to 16 weeks' gestation) in the Mtwara region of Tanzania increased from 18.7 percent to 37.7 percent in 2005, and to 56.9 percent in 2006 after the promotion of the Safe Motherhood Initiative and skilled birth attendance (Mushi, Mpembeni & Jahn, 2010:1). A study, conducted by Nyamtema, Bartsch-de Jong, Urassa, Hagen and Roosmalen (2012:1), audited 363 maternal mortalities and 20 percent of these deaths were attributed to substandard ANC services. Although the substandard ANC care was attributed to shortages of staff and facilities, changed approaches to ANC were required.

Traditionally, ANC programmes in most African countries were based on earlier European and other developed countries' models (Ekabua et al, 2011:1). ANC components were evaluated to propose new improved approaches that are cheaper, faster and evidence-based (Stephenson, 2005:1). The WHO developed a FANC package that included provision of information, counselling, examinations and medical tests that serve immediate purposes. FANC in Kenya had positive effects on the quality of care for pregnant women and newborn babies (Birungi & Onyango-Ouma, 2006:6),

particularly concerning birth preparedness and awareness of obstetric danger signs. The WHO (2009:1) states that 'the development and maintenance of a competent workforce is a key component of the WHO's effort to strengthen health systems based on primary health care'. The use of maternal health services is associated with improved maternal and neonatal health outcomes (Birungi & Onyango-Ouma, 2006:7).

According to Ekabua et al (2011:3–4), skilled providers can individualise care for the pregnant woman, during at least four ANC visits commenced during the first trimester of pregnancy, based on FANC guidelines. These guidelines refer to providing continuity of care, detection and early treatment of conditions that could adversely affect the health of a pregnant woman and/or an unborn child. It includes protection against malaria and the prevention of sexually transmitted infections and HIV/Aids. Aspects such as counselling, health promotion, disease prevention, preparation for childbirth and awareness of potential complications are major components of the FANC programme.

PROBLEM STATEMENT

There is a great need for nurses in practice, policy makers, educators, researchers and scientists to join efforts to improve the health of pregnant women and neonates. The introduction of FANC as a framework for making ANC an effective strategy for healthy pregnancy outcomes is essential in most African countries. Nurses' perceptions of the FANC guidelines could influence the effective implementation thereof. Although the majority 93.7 percent (n=134) of pregnant women in Tanzania attend ANC at least once, the quality of care and high maternal and neonatal mortality rates are cause for concern (Nyamtema et al, 2012:1). Jhpiego (2000-2015) reports that Tanzania has an estimated total population of 47.7 million with a maternal mortality ratio of 450 per 100 000 live births and infant mortality rate of 26 per 1 000 live births. Although the state of poor maternal and neonatal care seems to be due to complex interacting factors, the perceptions of nurses who implement the FANC model in particular, could shed light on some critical areas.

SIGNIFICANCE OF THE PROBLEM

Examining nurses' perceptions of the implementation of FANC services could help to identify gaps in their knowledge, training and management of resources, equipment and facilities. Contributory factors that could impede the successful implementation of FANC's principles, might become apparent through the findings. Identified gaps could help all stakeholders to address, strengthen and improve the quality of services to the pregnant woman and the unborn child. The findings will also contribute to the improvement of standards of nursing education and research pertaining to maternal and child health services.

PURPOSE OF THE STUDY

The purpose of the study was to examine the perception of nurses about the implementation of FANC services in district health facilities of Dar es Salaam, Tanzania. The objective of the study was to describe the perception of nurses about the implementation of FANC services.

DEFINITIONS OF KEY CONCEPTS

Antenatal care (ANC) is defined as care of a pregnant woman and the unborn baby throughout pregnancy. In this study, ANC refers to care rendered to a pregnant woman and the unborn child who visit the antenatal clinics in the district health facilities of Dar es Salaam from the time of conception until the beginning of labour.

Focused antenatal care (FANC) refers to the care that focusses on assessment and decisions made by nurses in order to provide each individual woman and family with information. This is to assist them to make informed choices and decisions (Anya et al, 2008:2). The traditional approach of ANC assumed that better care for pregnant women and their babies would be achieved by frequent routine visits, but FANC emphasises a reduced number of visits, based on individualised assessments for potential complications and danger signs (Von Both, Flepa, Makuwani, Mpembeni & Jahn, 2006:1). In this study, FANC refers to the model of care for pregnant women implemented by midwives at the study site, based on guidelines provided by the WHO, which focus on assessment and actions needed for each woman's situation.

Implementation is the category of nursing behaviour in which the actions necessary for achieving the projected outcomes of the health care plan are initiated and completed (Potter, Griffin, Ross-Kerr & Wood, 2006:213). In this study implementation refers to how nurse-midwives carry out a care plan by assisting a pregnant woman to meet the ANC goals of a healthy mother and baby.

A nurse, according to Tanzania's Nurses' and Midwives' Registration Act no 12 of 1997, is 'a person who has completed an approved nursing programme recognised for the time by the Nursing Council, registered and legally authorised to render services designed to promote health and prevent diseases; alleviate suffering and rehabilitate the needy' (Tanzania, 1997:4). A nurse in this study refers to nursing officers, nurse midwives and public health nurses who provide FANC services to pregnant women directly or indirectly.

A nurse-midwife is defined as a nurse skilled in assisting a pregnant woman during the prenatal period and child birth, in a health care setting, at home or in another non-hospital setting (Tanzania, 1997) and for rendering skilled care to both the mother and

the baby after birth. In this study, a nurse midwife is a nurse who renders FANC services to a pregnant woman from conception until labour.

A nursing officer is a nurse who has been especially prepared in the scientific basis of nursing and who meets certain prescribed standards of education and clinical competence in order to provide services essential to or helpful for the promotion, maintenance and restoration of health and well-being (Tanzania, 1997). In this study, nursing officers are nurses who have acquired skills and knowledge because midwifery was part of their curriculum during their basic training programme. They arrange training in FANC and act as supervisors where pregnant women are cared for.

Perception is defined by Potter et al (2006:260) as a person's mental image or concept of elements in the environment, including information gained through the senses. In this study nurses are expected to perceive and express their views, opinions and understanding on the implementation and outcomes of FANC services.

A public health nurse is a registered nurse who provides prevention and health promotion services to people in need of such care, including pregnant women, mothers, infants and families in homes (Tanzania, 1997). In this study, a public health nurse is a nurse who takes care of the pregnant woman and the family by providing information for them to make healthy choices and decisions.

RESEARCH METHODOLOGY

A quantitative, descriptive study design was used to conduct the study.

Population and sample

Data were collected from 143 eligible respondents, comprising nursing officers (35%, n= 50), public health nurses (28%, n=40), and nurse-midwives (37%, n=53) providing ANC services directly or indirectly. Data were collected during July 2009. Respondents had to be above 18 years of age and trained in FANC.

Sampling process

A stratified, systematic random sampling method was used to select both study settings and respondents. A list of all the health facilities which constituted strata of hospitals, health centres, and dispensaries was compiled alphabetically. A systematic sampling process of selecting every third unit was used, implying that 9 out of 27 health facilities were selected as study sites (3 hospitals, 3 health centres and 3 dispensaries). Respondents were selected by random sampling from the selected health facilities. A

sampling frame was created by compiling an alphabetical list of all nurses who were on duty on the days when data were collected. Systematic sampling consisted of selecting every third name on the list to be included in the sample.

Data collection

A questionnaire was developed using the literature review as a frame of reference. The items were closed-ended and worded in such a way that respondents were limited to specified, mutually exclusive response options. Closed-ended options facilitated the coding and statistical analysis of data. The questionnaire was divided into sections that covered demographics and nurses' perceptions related to the implementation and outcomes of FANC. The instrument was pretested and two questions were modified for better clarification. Data were collected by the researcher and two trained volunteers, using self-administered questionnaires from 150 respondents with a 95 percent (n=143) return rate.

Validity and reliability

Face and content validity were ensured by seeking the input of a statistician and three experienced nurse-midwives who had been involved with the implementation of the FANC model for a substantial period and were not part of the study. They were experts on the study phenomena and their input was sought to determine the readability and clarity of content. Construct validity was ensured by conducting an extensive literature review and consulting a variety of dictionaries to define all the key concepts of the construct. Cronbach's coefficient reliability results were 0.86 and therefore greater than 0.7, which indicated internal consistency reliability (Burns & Grove, 2007:404).

Ethical considerations

Ethical clearance was granted by the Research and Ethics Committee at the University of South Africa's Department of Health Studies. Permission to conduct the study was obtained from the Dar es Salaam City Council and different district offices in Tanzania. Informed consent was obtained from each respondent. No one had access to the completed questionnaires except the researcher and the statistician. Anonymity was ensured by not allowing names or addresses of the respondents to be attached to questionnaires. Respondents were verbally informed that they could withdraw from the study at any stage whenever they might feel uncomfortable.

DATA ANALYSIS AND DISCUSSION

The SAS/Basic and SAS/STAT version 11.1 software computer programs were used to analyse data. Descriptive statistics were calculated and presented as figures, frequency tables and percentages. The figures depict the biographic attributes of the sampled population according to nursing categories and whether the respondents had undergone reproductive and child health (RCH) training. The tables present the respondents' perception about the implementation and outcome of FANC services. Simple statistics of means and standard deviations were calculated as presented in table 3.

Demographic data

Nursing categories (n=143)

The type and number of nursing categories exhibited in figure 1 are important for this study because FANC services are provided by specified cadres of nurses in terms of their different levels of training.

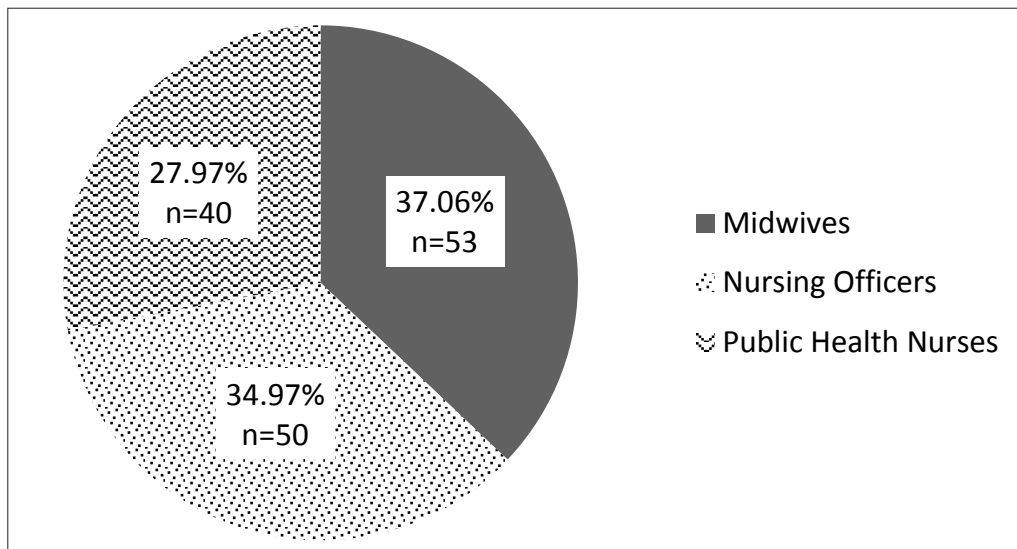


Figure 1: Nursing categories

These nursing categories were identified as 34.97 percent (n=50) nursing officers, 37.06 percent (n=53) nurse-midwives and 27.97 percent (n=40) public health nurses. The nursing officers and midwives had more diverse birth attendance skills than public health nurses in handling various complex health challenges of pregnant women. Nkowane, Boualam, Haithami, Sayed and Mutambo (2009:1) report that nurses and midwives form

the major categories of frontline health workers and are the key providers of nursing and midwifery services in many countries.

Number of respondents trained in reproductive and child health (n=143)

Before nurses are able to render ANC services, they have to be trained in RCH services.

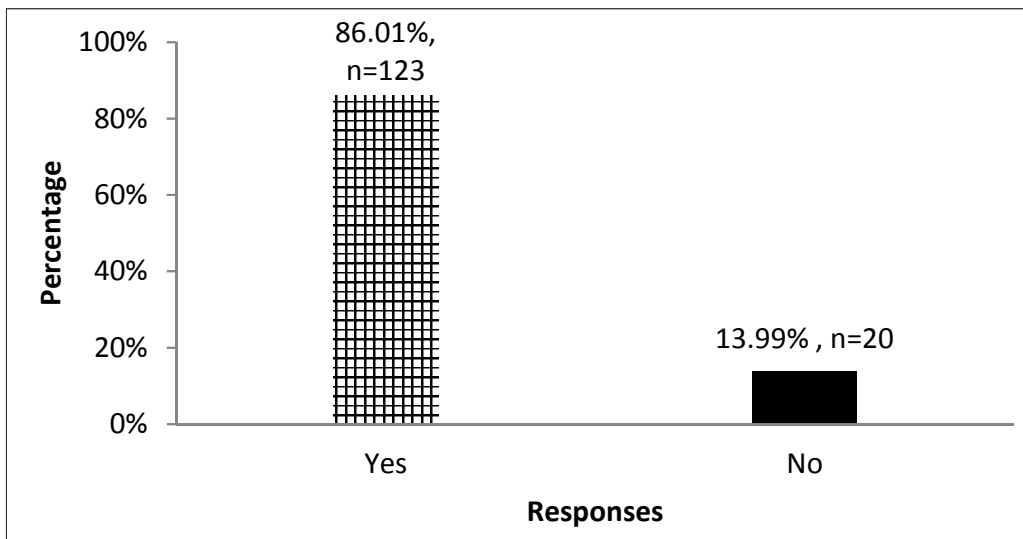


Figure 2: Trained in reproductive and child health

Although 86.0% (n=123) of the respondents had received RCH training (see figure 2) and were involved with the implementation and evaluation of the FANC package as many as 86.7% (n=124) reported that they could not apply their RCH knowledge, but no specific reasons were provided. Only 14.0 percent (n=20) had reportedly not been trained in RCH. Anya et al (2008:5) confirm that health workers trained in conventional ANC routines need to be retrained in the goal-oriented FANC approach. Findings from a study done in the Mtwara coastal region of Tanzania by Von Both et al (2006:2) concluded that an additional investment in human resources, through training and education, is needed before FANC services can be implemented successfully.

Overall considerable knowledge had been gained by nurses as reported by 96.5 percent (n=138) of the respondents. Nurses can only be of assistance to pregnant women if they have the appropriate knowledge, skills and attitudes (Homer et al, 2009:676). A study conducted in rural southern Tanzania reported that training opportunities for skilled birth attendants needed to be strengthened for better pregnancy outcomes (Mrisho et al, 2009:1).

Experience in reproductive and child health (n=135)

Of the respondents, 42.2 percent (n=57) had one to five years' experience in delivering RCH, whereas 11.9 percent (n=16) had six to ten years' experience, which made it the smallest group. Those respondents who had 11 to 15 years' RCH experience (20.7%, n=28) and those with 16 or more years' RCH experience (25.2%, n=34) had to act as preceptors and supervisors to those with less experience. Only 5.9 percent (n=8) of respondents did not answer the question.

Adequacy of staff and clinic resources (n=141)

This section included aspects such as adequacy of staff and clinic resources at the ANC clinics. Many respondents (73.7%, n=104) reported that they encountered staff shortages while 26.2 percent (n=37) indicated that their staff allocations were adequate. A shortage of nurses is a threat to the provision of FANC and other essential nursing services and acts as a serious obstacle to the successful implementation of FANC. In 2006 the global deficit of health workers was nearly 4.3 million. Fifty-seven countries, 36 of which were in sub-Saharan Africa, experienced critical staff shortages. The shortage of nurses has negative effects on the quality of patient care, but also impacts on the remaining nurses who carry larger workloads (Smith & Henderson-Andrade, 2006:426).

Other clinic resources displayed by a mean of 3, which was reported as inadequate, included the number of rooms and space; facilities for infection control; laboratory equipment for testing for haemoglobins, sexually transmitted infections and HIV/Aids. Other preventative resources which were noted as lacking were long-lasting insecticide-treated bed nets (ITNs) for protection against malaria resulting in a reduction in child mortality. A shortage of ANC cards was common as evidenced by a mean of 4. These findings on the inadequacy of staff and clinic resources concur with those reported by a study conducted in Ghana (Nyarko et al, 2006:13) indicating that a crucial shortage of essential equipment, drugs and gloves impacted negatively on the implementation of FANC.

Perception about the implementation of FANC

The tables give an overview of respondent perception on FANC services implementation and outcome at the clinics where they work.

Table 1: Nurses' perceptions about the implementation of focused antenatal care

Implementation	Agreed		Undecided		Disagree		Total
	n	%	n	%	n	%	
Clinic provides FANC services	137	95.8	1	0.7	5	3.5	143
Time spent with women is adequate	134	93.7	3	2.1	6	4.2	143
Tetanus immunisation is provided	142	99.3	0	0.0	1	0.70	143
Counselling on hygiene and infection prevention	142	99.3	0	0.0	1	0.70	143
Information about risks of drugs, tobacco and alcohol	116	81.6	13	9.2	13	9.2	142
IPT medication provided for malaria	142	99.3	0	0.0	1	0.7	143
ANC card recorded according to guidelines	143	100.0	0	0.0	0	0.0	143

Almost all nurses (95.8%, n=137) confirmed that their clinics implemented FANC services. This finding correlated with the large number (93.7%, n=134) of respondents who indicated that they spent adequate time with their patients.

Tetanus immunisation was reportedly provided at the clinics according to 99.3 percent (n=142) of the respondents, supporting the fact that cases of tetanus were very rare among newborn babies in Dar es Salaam. Manji (2009:7) reports that 'one area where Tanzania has made considerable progress is in reducing neonatal tetanus, which is at a 2% low'. This was also enhanced by health education that emphasised umbilical cord care. Almost all the respondents (99.3%, n=142), provided counselling on the use of ITNs. Pregnant women need to use ITNs to protect themselves and their unborn babies from malaria. At the clinics, vouchers were given to pregnant women to buy ITNs at identified stores at low cost. In a Nigerian study conducted by Musa, Salaudeen and Jimoh (2009:355), problems such as scarcity of quality nets and difficulty in getting chemicals for the retreatment of nets were reported. Although the government provided free ITNs for pregnant women, utilisation of the bed nets was reportedly low. Most of the nurses (99.3%, n=142) in this study indicated that malaria medication for intermittent preventive treatment (IPT) was provided according to protocol. Pregnant women took the Malaria IPT at the clinic (93.7%, n=134), according to the WHO (2012:3) IPT guidelines. These stipulate that the first IPT dose should be administered as early as possible during the second trimester of gestation. The last dose of IPT can be administered as late as at 36 weeks' gestation without safety concerns.

Most nurses (81.6%, n=116), as exhibited in table 1, provided information about medications and about the dangers of tobacco and alcohol to pregnant women.

Perceptions about the outcome on the implementation of FANC

The study reported a high response of 95.6 percent (n=135) related to how FANC implementation and its outcomes were perceived as exhibited in table 2.

Table 2: Perceptions about the outcomes of the implementation of focused antenatal care

Implementation	Agreed		Undecided		Disagree		Total
	n	%	n	%	n	%	
Clinic/health centre was ready to provide FANC	137	97.2	3	2.1	1	0.7	141
Obstacles such as inadequate resources to implement FANC were attended to	128	92.1	7	5.0	4	2.9	139
FANC training was helpful	134	93.7	4	2.8	5	3.5	143
FANC implementation perceived positively	137	96.5	3	2.1	2	1.4	142
ANC clients are satisfied with 4 ANC visits	134	94.4	4	2.8	4	2.8	142
Pregnant women are satisfied with service	137	96.5	2	1.4	3	2.1	142
Properly followed FANC guidelines, healthy mother and baby	141	98.6	2	1.40	0	0.0	143
AVERAGE	135	95.47	25	2.5	19	1.9	141

Most respondents (98.60%, n=141) followed the FANC guidelines in caring for pregnant women.

Oladapo, Iyaniwura and Sule-Odu (2008:75) report that both women and providers of midwifery care generally accepted the new FANC model. They stated that fewer visits (as few as four) for women without complications with longer time spans between the visits, needed to be reinforced if FANC is introduced as routine practice. The timing of visits was scheduled according to each woman's individual needs.

As many as 97.2 percent (n=137) of respondents were ready to implement FANC. The major obstacle to successful implementation of FANC was a shortage of nurses and non-human resources according to 73.8 percent (n=104) of respondents.

Most respondents (94.4%, n=134) reported that ANC clients were satisfied with four ANC visits as recommended by the WHO (2009:5) guidelines on FANC. Almost all (96.5%, n=137) nurses reported that they did not receive any complaints about FANC services from the pregnant women. This finding is similar to Mrisho et al's (2009:1) study in which nearly all women perceived ANC services to be important and expressed complete trust in health-care providers. In a study done in Uganda it was concluded that women were prepared to travel to health facilities providing quality services, including voluntary counselling and IPT (Tann et al, 2007:10). Most respondents (98.6%, n=141) indicated that if the FANC guidelines were appropriately followed, the outcome could be a healthy mother and baby, reducing maternal and infant mortality rates.

In conclusion, nurses who participated in the study had positive perceptions of both the implementation and outcome of FANC in Dar es Salaam, Tanzania.

CONCLUSION

The practice of FANC was positively perceived by nurses at the district health facilities to improve the quality of reproductive health services in Tanzania. There were, however, some gaps identified such as the provision of adequate human and clinic resources. Apart from the identified inadequacies, FANC may be one way of improving the health of the pregnant woman and the neonate by nurses in clinics.

RECOMMENDATIONS

Authorities and management need to attend to and review the human resource allocation budget. Extensive recruitment and employment of nurses by the district health authorities is important in order to address the shortage of staff. Budgets should also address shortages of material resources which are essential for the successful implementation of FANC services to pregnant women and neonates. Further recommendations refer to nursing education and research.

Nursing education

All nurses dealing with pregnant women need to be trained and supervised in the implementation of the FANC model. Nurses who are already trained should continue receiving updates from the Health Ministry of Tanzania, the WHO and other authoritative sources so that they keep abreast of new developments in FANC and RCH.

Nursing research

More empirical investigations with larger populations are recommended for objective conclusions and feasible recommendations to stakeholders such as the educational institutions and government. Statistics should be kept about the maternal and neonatal outcomes at every clinic so that shortcomings can be identified and addressed. The views of women who utilised FANC services should also be obtained.

LIMITATIONS

The sample size was small for a quantitative study and thus made generalisability of results impossible without repeating similar studies in other areas. Internal validity might have been affected and the random sampling process compromised due to the different sites where data were collected. Another limitation was that the perceptions of pregnant women on the implementation of FANC are missing, which could have identified other potential gaps. Additionally, a qualitative mode of inquiry might have produced more in-depth information than the use of closed-ended questionnaires that limited free expressions of how implementation of FANC had been experienced by the respondents.

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REFERENCES

- Anya, S.E., Hydera, A. & Jaiteh, L. 2008. Ante natal care in the Gambia: missed opportunity information, education and communication. *Biomedical Central Pregnancy and Childbirth*, 8(9):1-7.
- Birungi, H. & Onyango-Ouma, W. 2006. *Acceptability and sustainability of the WHO focused antenatal care package in Kenya. Frontiers in Reproductive Health Program, Population Council Institute of Africa Studies*. Nairobi: University of Nairobi.
- Burns, N. & Grove, S.K. 2007. *Understanding nursing research: building an evidence-based practice*. 4th edition. St Louis, MO: Saunders Elsevier.
- Ekabua, J., Ekabua, K. & Njoku, C. 2011. Proposed framework for making focused ante natal care services accessible: a review of the Nigerian setting. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3255312/> (Accessed 15 November 2013).
- Homer, S.E., Passat, L., Brodie, P.M., Kildea, S., Leap, N., Pincombe, J. & Thorogood, C. 2009. The role of the midwife in Australia: views of women and midwives. *Midwifery*, 25(6):673-681.

- Jhpiego. 2000-2015. Tanzania country profile. <http://www.jhpiego.org/en/content/tanzania> (accessed on 12 December 2013).
- Manji, K. 2009. *Situation analysis of newborn health in Tanzania: current situation, existing plans and strategic next steps for newborn health*. Dar es Salaam: Ministry of Health and Social Welfare.
- Ministry of Health and Social Welfare of Tanzania. 2008. *The national road map strategic plan to accelerate reduction of maternal, newborn and child deaths in Tanzania 2008–2015*. Reproductive and Child Health Section. Dar es Salaam: Government Printer.
- Mrisho, M., Obrist, B., Armstrong-Schellenberg, J., Haws, R.A., Mushi, A.K., Mshinda, H., Tanner, M. & Schellenberg, D. 2009. The use of antenatal and postnatal care: perspective and experiences of women and health care providers in rural southern Tanzania. *Biomedical Central Pregnancy and Childbirth*, 9(10):1–12.
- Musa, O.I., Salaudeen, G.A. & Jimoh, R.O. 2009. Awareness and use of insecticide treated nets among women attending ante natal clinic in northern state of Nigeria. *Journal of Pakistan Medical Association*, 59(6):354–358.
- Mushi, D., Mpembeni, R. & Jahn, A. 2010. Effectiveness of community based safe motherhood promoters in improving the utilization of obstetric care. The case of Mtwara Rural District in Tanzania. *Biomedical Central Pregnancy and Childbirth*, 10(14):14:1–9.
- Nkowane, A.M., Boualam, L., Haithami, S., Sayed, E.T.A. & Mutambo, H. 2009. The role of nurses and midwives in polio eradication and measles control activities: a survey in Sudan and Zambia. *Human Resources for Health Journal*, 7(78):1–8.
- Nyamtema, A.S., Bartsch-de Jong, S., Urassa, D.P., Hagen, J.P. & Roosmalen, J. 2012. The quality of ante natal care in rural Tanzania: what is the number of visits? *Biomedical Central Pregnancy Childbirth*, 12(9):1–5.
- Nyarko, P., Birungi, H., Armar-Klemesu, M., Arhinful, D., Deganus, S., Odoi-Agyarko, H. & Brew, G. 2006. *Acceptability and feasibility of introducing the WHO focused antenatal care package in Ghana*. Kampala: Reproductive and Child Health Service.
- Oladapo, O.T., Iyaniwura, C.A. & Sule-Odu, A.O. 2008. Quality of services at the primary care level in Southwest Nigeria. *African Journal of Reproductive Health*, 12(3):71–92.
- Potter, P.A., Griffin, A., Ross-Kerr, J.C. & Wood, M.J. 2006. *Canadian fundamentals of nursing*. 3rd Edition. Toronto: Elsevier.
- Smith, M.K. & Henderson-Andrade, N. 2006. Facing the health worker crisis in developing countries: a call for global solidarity. *Bulletin of the World Health Organization*, 84(6):426.
- Stephenson, P. 2005. Focused ante natal care: a better, cheaper, faster, evidence-based approach. Global health technical briefs. <http://www.popline.org/node/256461> (accessed on 15 May 2007).
- Tann, C.J., Kizza, M., Morison, L., Mabey, D., Muwanga, M., Grosskurth, H. & Elliot, A.M. 2007. Use of ante natal services and delivery care in Entebbe, Uganda: a community survey. *Biomedical Central Pregnancy and Childbirth Journal*, 7(23):1–11.
- Tanzania. 1997. *Nursing Act, no. 12 of 1997*. Dar es Salaam: Government Printer.
- Von Both, C., Flepa, S., Makuwani, A., Mpembeni, R.S. & Jahn, A., 2006. How much time do health services spend on ante natal care? Implications for the introduction of the Focused ante natal care model in Tanzania. *Biomed Central Pregnancy and Childbirth*, 6:1–2.
- WHO see World Health Organisation.
- World Health Organization. 2009. *Making pregnancy safer*. Geneva: World Health Organisation.
- World Health Organization. 2012. *WHO Evidence Review Group: intermittent preventive treatment of malaria in pregnancy with Sulfadoxine-Pyrimethamine*. Geneva: World Health Organization.