

Barriers and Potential Enhancers to the Provision of Quality Immediate Postnatal Care to HIV-Infected Mothers and Their HIV Exposed Infants in Swaziland

Bongani Robert Dlamini, PhD¹, Wendy Patience Gule, MA²

¹Program analyst-SRH, HIV & Youth, UNFPA-Swaziland

² Department of Midwifery, Sothorn African Nazarene University.

Abstract: *The purpose of this study was to determine challenges and possible strategies to improve postnatal care (PNC) provision to HIV-infected mothers and their HIV-exposed infants by midwives. Quantitative descriptive cross-sectional design study was used. Data collection was done using structured questionnaires. Eighty eight (88) midwives participated in the study. Descriptive data analysis was conducted using IBM SPSS Statistics version 22.0 software. The study highlighted severe shortage of human resources for health, drugs and supplies. Lack of guidance in the manner to offer immediate PNC was also a noted challenge among midwives. Adaptation of immediate PNC guidelines with clear steps to follow was mentioned as a possible enhancer to the provision of quality immediate care. Addition of staff was highly recommended, as well as structured and well-coordinated in-service trainings were mentioned as possible strategies in improving PNC.*

Key concepts: *HIV-exposed infants, HIV-positive mothers, midwives, postnatal care.*

1. Introduction

Much have be done to prevent maternal and neonatal deaths. These include the launch of the Global Strategy for Women's and Children's Health in 2010 by the United Nations Secretary-General. Subsequently, the high-level Commission on Information and Accountability for Women's and Children's Health was established to determine the most effective international institutional arrangements for global reporting, oversight and accountability on women's and children's health. These may have contributed to the reduction of maternal mortality ratio (MMR) by 45% between 1990 and 2013. There were an estimated 289 000 maternal deaths in 2013, yielding a maternal mortality rate (MMR) of 210 maternal deaths per 100 000 live births [1]. However, the majority (99%, 286

000) of these deaths occurred in developing countries. The sub-Saharan Africa region alone is accounting for 62% (179 000) followed by Southern Asia (69 000) [1]. Postpartum deaths account for 60% of all maternal deaths, compared to only 15.5% for intrapartum and 23.9% for antepartum [2].

Having a skilled birth attendant present at childbirth, backed-up by availability of essential material resources, and organizational resources including lifesaving reproductive health drugs during pregnancy, labor and delivery and the postnatal care period is required, and it is perhaps the most critical intervention for preventing maternal and neonatal deaths [3]. Skilled birth attendance is the global priority and a promising strategy to reduce maternal mortality ratios. Governments, especially those from developing countries and other provider agencies are expected to use scarce health resources to increase the proportion of deliveries attended by skilled birth attendants [2].

Access to high-quality prenatal care and assistance in childbirth can mean the difference between life and death among women and infants. For decades it has be known what needs to be done to prevent maternal deaths [4]. Relatively simple, safe and affordable approaches exist to successfully prevent or treat most obstetric complications and thus save women's lives. It is important to enhance the quality of postnatal care offered to mothers and their infants, especially those living with HIV.

One approach that could help in achieving this goal is the availability of skilled birth attendants during pregnancy, labour, delivery and postnatal care, particularly during the immediate postnatal period. This ultimately requires structural changes such as availability of material and organizational resources including getting women out of poverty, eliminating gender inequalities and building stronger health systems [4]. This will de-link the high maternal mortality which is inextricably linked to development and culture-related factors that are not simple to change. There are some concrete measures

that need to be immediately put in place in order to prevent or at least reduce maternal mortality.

Skilled birth attendants can only be effective when they work in the context of functional health systems. Communities are key stakeholders in maternal newborn child health services and they are at the foundation of affordable, equitable and effective healthcare, and are the core of the success of reduction of maternal and neonatal deaths [5]. Low utilization of PNC services has been associated with women's lack of knowledge about its importance, their lack of perceived need, low level of education, poverty, lack of access to healthcare facilities providing PNC, lack of appointments or recommendations from healthcare providers to obtain PNC, poor attitude of healthcare providers, or women's tendency to give priority to the health needs of their infants rather than their own [6].

Many factors prevent women from accessing health care in Swaziland. A quantitative descriptive study involving 372 mothers during the postnatal period found that barriers for HIV-positive women for not attending PNC include: midwives' negative attitude (16.7%); fear of HIV testing and counselling (HTC) and possible child HIV-positive status (9.4%); mothers' lack of knowledge (13.4%); long waiting time (16.7%); stigma (3.8%); transport fees (10.5%) and work environment (2.7%) [7].

Swaziland statistics report high maternal mortality rate of about 593 per 100 000 live births and high infant mortality rate of about 79 per 1000 live births [8]. The high maternal mortality ratio in Swaziland is against well performing indicators such as 88% of hospital delivery, and about 88% of all births being attended to or facilitated by skilled birth attendants [8]. The question now arises, what is contributing to these maternal deaths?

2. Materials and methods

2.1 Design

The present study utilised a quantitative cross-sectional design to investigate the challenges and potential strategies to improve the provision of immediate PNC services to mothers and their newborns in maternity units in Swaziland. Identification of challenges in the provision of immediate PNC by midwives resulted in the recommendations of strategies and adoption of evidence-based guidelines for the implementation of quality immediate PNC for mothers and their infants in Swaziland, more so because the literature review revealed that the country does not have PNC guidelines. Whereas, the immediate postpartum

period is that timeframe during which about 60% of maternal deaths tend to occur [9].

2.2 Sample

A simple random sampling approach, which is a basic probability sampling technique that involves the selection of a sample of sites from a sample frame, was used to select the study sites. The researcher established a sampling frame and the elements of this sampling frame were all the 11 maternities, which were numbered to facilitate random selection. A table of random numbers was used to select the study sample. The result of this exercise was the selection of a total of six maternities. These are in the four regions of the country.

With regard to sampling of the respondents, a systematic random sampling technique was used for the selection of the same. There were 114 midwives in the study sites (6 maternities), and the desired sample size (minimum) for the study was 81, calculated using the formula for estimation for a single population proportion [10].

$$N = \frac{Z_{\alpha}^2 p (1-p)}{d^2} = 81$$

Where, N is the required minimum sample size, $\frac{Z_{\alpha}^2}{2}$ is a standard score of 1.96 for 0.05 significance level. This means the level of statistical significance for the sampling of respondents was set at $p < 0.05$. P is the case detection or proportions of predecessor studies, 0.12, and d is the margin of error and taken to be 5%. The study has 80% statistical power.

2.3 Data collection

Data were collected using structured questionnaires, which contained open-ended questions at the end. Face-to-face structured interviews were conducted between January 2014 and June 2014 in the selected study sites. The questionnaires were divided into a number of sub-sections: Section A included demographic information, such as age, marital status, and level of education about the respondents. Section B included clinical immediate PNC interventions to be offered to HIV-positive mothers and section C included open-ended questions. This allowed respondents to respond to questions in their own words.

2.4 Data management and analysis

Each questionnaire was checked by the researcher for completion and accuracy. Collected data were

securely kept in a locked cupboard and only accessible to the research team. Trained research assistants captured data into the computer. Captured data were exported and analysed using IBM SPSS Statistics, version 22.0. Descriptive and inferential statistics were the two approaches to data analysis used in this study. For the qualitative data that was generated from the open-ended questions and field notes, content trend analysis was conducted, and this led to the identification of themes. The themes highlighted the challenges and potential enhancers for improving the quality of PNC provision by midwives in the study sites.

2.5 Validity and Reliability

The data collecting tool was tested for content validity. It was given to midwives at Dvokolwako Health Centre and midwifery lecturers at the Southern African Nazarene University to input. It was also given to an independent expert to check for conceptual and investigative bias. In addition, the sample was randomly selected, and its size was determined using a significance level or error rate of 0.05 (95%). Sufficient data was collected using the minimum sample size of 88. The instrument used in this study was tested on similar populations, and its reliability was evaluated.

2.6 Ethical considerations

Ethical approval was sought from the Swaziland Ethics and Research Committee in the Ministry of Health. This included senior management at the study settings. The University of South Africa Higher Degrees Committee of the Department of Health Studies approved the protocol. Lastly, the participants who took part in the study; their consent was sought verbally and written before each interview. The researchers adhered to all ethical issues related to human research. Participants were informed about the study (aim, objectives, significance, data collection process, and implications of the results), their rights for free participation, confidentiality, privacy, and to withdraw from the study at any time. Consent form was read and signed by each participant before the interview. Data collected were treated with confidentiality and anonymity throughout the management and analysis processes.

3. Results

3.1 Demographic information of respondents

A majority (43.2%, n=38) of the respondents were within the age range of 30–39 years, 33.0% (n=29) were in the range of 29 years and below, and 19.3%

(n=17) in the range of 40–49 years. About 4.5% (n=4) of the respondents were 50 years and above. All respondents were licensed to practice midwifery in Swaziland, 67.0% (n=62) had a Post-graduate Diploma in Midwifery qualification, 27.3% (n=24) had a Bachelors degree with a midwifery speciality, and only 2.3% (n=2) had Advanced Midwifery Certificate. Of the 88 respondents, 31.8% (n=28) had more than 6 years of experience of midwifery practice, 27.3% (n=24) had 2-4 years, 19.3% (n=17) had 4-6 years and 21.6% (n=19) had 0-2 years of experience.

3.2 The challenges of postnatal care provision

3.2.1 Uncoordinated in-service trainings

Midwives who participated in this study were asked on the challenges they were facing regarding provision of immediate PNC. A number of challenges were reported. These included uncoordinated in-service trainings, resulting in most of the trainings being HIV focused. This biasness affects key maternal, newborn and child health linked trainings, which in turn could affect the quality of provision of immediate PNC.

3.2.2 Unsatisfactory supervision

Poor supportive supervision was another major problem. This would mean inexperienced midwives cannot be mentored to sharpen their midwifery skills. This challenge may result in the provision of erratic and poor quality PNC, which may lead to puerperal complications.

3.2.3 Lack of postnatal care guidelines

The unavailability of guidelines for reference on care to be offered is a critical gap. Guidelines are useful for the standard provision of evidence-based care. This could result in fragmented care provided to clients. The unavailability of guidelines was a cause for concern. These challenges could lead to unaccountability of PNC and poor understanding of current evidence. This could lead to the provision of substandard immediate PNC.

3.2.4 Lack of space

The challenge of space or infrastructure in most of the maternity units in Swaziland resulted in early discharge of mothers after delivery. This practice exposes mothers as well as their infants to dangers, such as development of immediate postpartum complications at home. It was surprising that some mothers were discharged from health facilities within 3-12 hours post-delivery.

4. Discussion

Health systems are faced with a number of challenges, especially in sub-Saharan Africa [11]. Challenges include a severe shortage of human resources for health, drugs and supplies to name but a few. The case for Swaziland is complex and unique. Swaziland has a high maternal mortality ratio of about 593 per 100 000 live births and a high infant mortality rate of about 79 per 1 000 live births despite a 88% hospital delivery and 97% antenatal care (ANC) visit by pregnant women [8]. These indicators show that there is a gap somewhere in the continuum of care. The present study found that there are several areas of improvement in the provision of immediate PNC by midwives to mothers and newborns.

The unavailability of guidelines for reference on care to be offered is a critical gap. Guidelines help ensure standardization of evidence-based care. A lack of such guidelines could result in the provision of substandard care to clients. The challenges mentioned could lead to unnecessary maternal and neonatal deaths. The challenge of space or infrastructure in most of the maternity units in Swaziland results in early discharge of mothers after delivery. This practice exposes mothers and their infants to dangers, such as the development of postpartum complications at home. It was noted that some mothers were discharged from health facilities within 24 hours after delivery.

Continuous improvements on the immediate PNC to reduce or prevent unnecessary maternal and newborn deaths are global, regional and national responsibilities [12]. The respondents mentioned that if the quality of immediate PNC is to be improved, development of immediate PNC guidelines with clear steps to follow was to be prioritized. The recruitment of addition of staff was highly recommended, as well as a structured and well-coordinated in-service training. The recruitment of more staff was thought to improve the time each midwife would have with a client, which in turn could improve the quality of care provided. In order to provide quality care, basic equipment should also be available. The selected health facilities were assessed on whether they had the basic human, organisational and material resources to provide quality immediate PNC services to mothers and their infants.

4.1 Possible strategy to improve postnatal care provision

The respondents mentioned that if the quality of immediate PNC is to be improved, development of

immediate PNC guidelines with clear steps to follow was to be prioritized. Guidelines would help midwives, especially newly recruited midwives on the set or package of care to be provided during the immediate postnatal period. In addition, they will help in preventing gaps in the provision of care, which in turn could prevent maternal and neonatal deaths.

4.2 The guidelines adaptation process

The process of adapting the latest World Health Organization guidelines on PNC involved systematic discussions with representatives from the nursing schools, sexual reproductive health (SRH) unit, and other maternal, newborn and child health experts from non-governmental organisations (NGOs) and clinicians. The results of a situational analysis on maternal and infant mortality ratios for Swaziland [8] was presented as well the findings of the study on the non-availability of PNC guidelines. It was agreed that since the WHO has released new recommendation on PNC [12] and the fact that Swaziland did not have such guidelines; the WHO PNC guidelines were to be adapted.

4.2.1 Guideline Development Group

Maternal and neonatal experts constituted the Guidelines Development Group (GDG). Convening an effective and skilfully GDG is the first and most important step in producing an evidence-based guideline. The GDG had to agree on the adaptation process, consider evidence and adapt the PNC guidelines. Therefore, it was important that the membership of the GDG had to be broad and multi-professional, but also be appointed for the duration of the guideline adaptation process. The researchers approached the SRH Programme Manager in the MoH of Swaziland, to share the findings of the study and highlighted the implications of the findings. The researchers further presented the findings of a systematic review on guidance of immediate PNC in Swaziland. The WHO 2014 PNC guidelines were also discussed. It was agreed that due processes would be followed for the WHO 2014 PNC guidelines to be adapted.

The process of adapting the PNC guidelines was outlined. It involved the establishment of the GDG. The membership of the GDG included individuals who were committed to the task, and its composition was influenced by people's expertise in maternal and neonatal health, nursing, gynaecology/obstetrics, public health, midwifery, SRH and HIV.

4.2.2 Evidence retrieval and synthesis process

The researcher informed the GDG that the process of literature review had been conducted, however, the membership of the GDG was encouraged to bring additional evidence, which could improve the

guidelines. The secretary of the GDG mentioned that the internet including UNFPA, the Joint United Nations Programme on HIV/AIDS (UNAIDS), the World Health Organization (WHO), United Nations Child Emergency Fund (UNICEF) and Elizabeth Glaser Paediatric (EGPAF) websites were searched. Furthermore, academic libraries were searched, and Swaziland government documents were manually searched. The researcher presented the analysis of the literature retrieved from the varied sources. The analysis included the systematic review of PNC guidelines in Swaziland, and the new WHO 2014 PNC guidelines. The presentation highlighted the situational analysis of MMR, Infant mortality rate, and the timing of the mortalities, highlighting the need to focus on provision of quality PNC immediately after childbirth, the first 24 hours post-delivery, where about 60% of maternal and neonatal deaths occur [13]. Swaziland does not have postnatal guidelines. However, the prevention of mother to child transmission (PMTCT) guidelines provide some guidance on PNC for mothers and their infants. But the guidance provided in the PMTCT guidelines is skewed towards HIV.

It was decided that the presented data was sufficient to inform the adaptation of the new WHO PNC, as the country did not have PNC guidelines [8]. However, members were encouraged to bring additional evidence, as the GDG was critically aware that the literature review would not provide all the necessary information required for the adaptation of the guidelines. There was consensus among members of the GDG to adapt the WHO 2014 PNC guidelines, which was informed by latest and relevant evidence [12].

4.2.3 Guideline Development Group Meetings

The GDG held eight meetings between June 2014 and December 2014. The chairperson of the GDG guided each of these meetings in terms of the task or project (adapting the WHO 2014 PNC guidelines). The key topics covered in the guidelines were identified at the first meeting. The chairperson, in agreement with the GDG, established topic groups and each topic group was tasked to undertake the guideline adaptation process for that specific topic. Examples of topic groups included timing of discharge from a health facility after birth, number and timing of postnatal contacts, assessment of the baby, exclusive breastfeeding, cord care, other postnatal care for the newborn, assessment of the mother, PNC counselling, iron and folic acid supplementation, and prophylaxis. Each topic group was required to identify review questions to guide the identification and interrogation of the evidence relevant to the topic of the guidelines.

In addition, each topic group had to meet differently to work on their sections. These processes

led to the development of a draft-adapted guidelines per topic. These drafts were presented in the GDG meetings. Members of the GDG provided feedback and topic group members were given time to incorporate the changes proposed by the GDG. The final draft was presented to the GDG, and it was approved. The chairperson stated that the draft has to be presented to the Sexual Reproductive Health Inter-Agency Technical Coordination Committee.

4.2.4 Adoption of the adapted-guidelines

The researchers with the support of the chairperson of the GDG presented the draft-adapted guidelines to the relevant structure (Sexual Reproductive Health Inter-Agency Technical Coordination Committee in Swaziland). The committee provided feedback, and changes were incorporated to the guidelines as suggested by the committee. A final meeting of the GDG was held and the adapted guidelines were presented and approved by the group. Table 6.1 presents the adapted guidelines for the provision of immediate PNC to mothers and their infants in Swaziland.

Table 1 Immediate postnatal care guidelines for HIV-infected mothers and HIV-exposed infants [12].

IMMEDIATE POSTNATAL CARE GUIDELINES FOR HIV-INFECTED MOTHERS AND HIV-EXPOSED INFANTS	
TIME PERIOD	INTERVENTION
WHILE THE MOTHER IS ON THE DELIVERY BED	<ul style="list-style-type: none"> Quickly assess the baby for APGAR. Place the baby in skin-to-skin contact on the mother's abdomen. Clamp and cut the cord approximately 2-3 minutes after the baby's birth or cessations of pulsation, whichever comes first. Thoroughly dries the baby and cover the baby, including the head. Palpates the uterus to make sure no other baby is present. Administer a uterotonic drug Deliver and place the placenta in a receptacle

	<p>provided (e.g., kidney basin)</p> <ul style="list-style-type: none"> • Massage the fundus of the uterus through the woman's abdomen until the uterus is contracted (firm). • Expel clots • Inspect and repairs lacerations or tears (if necessary) of the lower vagina and perineum. • Repair episiotomy (if one was performed). • Examine the the placenta and membranes for completeness and abnormalities. • Estimate blood loss • Assist the woman and baby to begin breastfeeding within the first hour after birth • Measure the mothers' vital signs <ul style="list-style-type: none"> ○ blood pressure ○ temperature ○ pulse ○ respirations • Instil 1% tetracycline eye ointment to the child • Inject Vitamin K 0.5mg intramuscular to the child • Administer infant nevirapine • Document all findings and care provided 	<p>WHILE THE MOTHER IS ON THE DELIVERY BED AND CONTINUE DURING THE TIME OF TRANSFER TO THE POSTNATAL WARD</p>	<p><i>Midwives should provide comprehensive information to HIV positive mothers immediately after delivery. This should include</i></p> <ul style="list-style-type: none"> • Proper hygiene by use of saline sitz baths • Cord care • Counsel on new-born danger signs <ul style="list-style-type: none"> ○ Hypothermia ○ High respiratory rate ○ Fever ○ Refusal to feed ○ Bleeding umbilical cord • Adherence to antiretroviral drugs • Infant breastfeeding • Monitoring of vaginal bleeding • Fever and chills • Headache or blurred vision
		<p>WHILE MOTHER-INFANT PAIR ARE STILL ADMITTED IN POSTNATAL WARD</p>	<p><u>Maternal interventions</u></p> <ul style="list-style-type: none"> • Measure vital signs <ul style="list-style-type: none"> ○ Measure blood pressure ○ Measure temperature ○ Count pulse ○ Count respirations • Assess extent of uterus contraction • Conduct physical examination

	<ul style="list-style-type: none"> • Conduct pelvic examination • Assess vaginal wall • Assess vaginal discharge for colour, smell and amount • Administer analgesics • Documents all findings and care provided <p><u>New-born Assessment</u></p> <ul style="list-style-type: none"> • Measure vital signs <ul style="list-style-type: none"> ○ temperature ○ pulse ○ respirations • Conduct physical examination • Assess sucking reflexes • Assess cord • Documents all findings and care provided 		<p>for colour, smell and amount</p> <ul style="list-style-type: none"> • Administer analgesics • Documents all findings and care provided <p><u>New-born Assessment</u></p> <ul style="list-style-type: none"> • Measure vital signs <ul style="list-style-type: none"> ○ temperature ○ pulse ○ respirations • Conduct physical examination • Assess sucking reflexes • Assess cord • Administer immunizations (BCG,Polio) • Administer infant nevirapine • Document all findings and care provided
<p>AT DISCHARGE FROM HOSPITAL</p>	<p><u>Maternal interventions</u></p> <ul style="list-style-type: none"> • Measure vital signs <ul style="list-style-type: none"> ○ Measure blood pressure ○ Measure temperature ○ Count pulse ○ Count respirations • Assess extent of uterus contraction • Conduct physical examination • Conduct pelvic examination • Assess vaginal wall • Assess vaginal discharge 	<p>TAKE HOME MESSAGES</p>	<p><u>Provide comprehensive information on:</u></p> <ul style="list-style-type: none"> • Proper hygiene by use of saline sitz baths • Cord care • Counsel on new-born danger signs <ul style="list-style-type: none"> ○ Hypothermia ○ High respiratory rate ○ Fever ○ Refusal to feed ○ Septic umbilical cord

	<ul style="list-style-type: none"> • Adherence to antiretroviral drugs • Infant breastfeeding • Maternal danger signs <ul style="list-style-type: none"> ○ Vaginal bleeding ○ Fever and chills ○ Headache or blurred vision • Immunization Schedule • Cotrimoxazole prophylaxis counselling • NVP syrup schedules and dosing • Postnatal care visit at 3- 7 days • Postnatal care visit at 6 weeks • Safe infant feeding • Importance of your nutrition • Family planning
--	--

5. Conclusions

The challenges highlighted by the study during the provision of immediate PNC call for urgent attention and address. Considering that 60% of maternal deaths occur during the postnatal period [9]. The implementation of the adapted PNC guidelines for the provision of quality immediate postnatal care in Swaziland could reverse the increasing maternal and neonatal mortalities. Nepal adapted and safely implemented evidence-based PNC guidelines, and this resulted in a significant reduction in its MMR [12]. Acknowledging this, the Kingdom of Swaziland could achieve a similar reduction in its MMR if it were to implement evidence-based PNC guidelines.

6. Recommendations

Based on the findings, the researchers recommend the urgent implementation of the adapted PNC guidelines to improve the quality of immediate PNC rendered to mothers and newborns. In addition, the researchers recommend that the Sexual Reproductive Health Programme within the MoH conduct training needs assessment and skills audit in collaboration with partners, midwifery schools and regulatory bodies to provide evidence-based in-service training and/or specialised training in PNC to ensure that a competent midwifery workforce is maintained.

7. Limitations of the Study

The results of this study can be generalised to the whole of Swaziland with caution, as it was conducted in only six health facilities. It's outcomes generated huge insights into PNC. During the course of the study, there was a strike in one of the study sites. This could have led to incorrect information provided by the respondents. The issues of space to conduct interviews in a confidential manner were a challenge. Some respondents were reluctant to sign the consent form for participating in the study for fear of being identified, despite being assured of confidentiality.

8. Acknowledgments

The authors are grateful to all midwives who voluntarily participated in the study and the University of South for funding the project.

9. References

- [1] World Health Organization, United Nations Children Emergency Fund, United Nations Population Fund, World Bank & United Nations Population Division. 2014. *Trends in maternal mortality: 1990 to 2013. Estimates by WHO, UNICEF, UNFPA, the World Bank and the United Nations Population Division*. Geneva: WHO
- [2] World Health Organization. 2010. Maternal mortality. [Online]. Available: www.who.int/factsheet. [Accessed 30 August 2013].
- [3] World Health Organization. 2014a. Maternal mortality. [Online]. Available: www.who.int/factsheet.
- [4] Human Reproduction Program and World Health Organization. 2015. *Strategies toward ending preventable maternal mortality*. Geneva: WHO.
- [5] International Confederation of Midwives.

2015. *Midwifery Services Framework Guidelines for developing SRMNAH services by midwives*. The Hague.: ICM.
- [6] Dhaher, E, Mikolajczyk, RT, Maxwell, AE & Kramer, A. 2008. Factors associated with lack of postnatal care among Palestinian women: A cross-sectional study of three clinics in the West Bank. *BMC Pregnancy and Childbirth*, vol. 8, no. 26, pp. 1-9.
- [7] Dlamini, B. 2013. An evaluation of postnatal care rendered to HIV-positive women and their infants. University of South Africa, Pretoria.
- [8] Central Statistical Office. 2015. *Swaziland Multiple Indicator Cluster Survey 2014. Final Report*. Mbabane: Central Statistical Office and UNICEF.
- [9] Ziyane, IS & Thwala, M. 2010. Low uptake of postnatal care in Swaziland. *African Journal of Midwifery and Women's Health*, vol. 4, no. 1, pp. 15-21.
- [10] Johnson, B & Christensen, L. 2012. *Educational research: Quantitative, qualitative and mixed approaches. 4th edition*, London: Sage.
- [11] Africa Health Workforce Observatory. 2009. Human resource for health country profile: Swaziland. [Online]. Available: www.hrobservatory.afro.who.int/.../Country_profile_Swaziland.pdf.
- [12] World Health Organization. 2014b. *WHO recommendations on postnatal care of the mother and newborn*. Geneva: WHO.
- [13] Aryal, S, Dariang, M & Cullen, R. 2013. *Improving the quality of pre-discharge postnatal care in selected facilities in Banke district*. Banke: Nepal Health System Strengthening Programme.
- [14] Jacobson, N. 2013 " Postnatal care. [Online]. Available: www.healthline.com/galecontent/postpartum. [Accessed 19 August 2013].
- [15] Warren, C, Daly, P, Toure, L & Mongi, P. 2006. Postnatal care." 2006. [Online]. Available: www.who.int/pmaternal_newborn_child_health/media/publications/aonsectionIII_4.pdf. [Accessed 29 February 2012].
- [16] Kingdom of Swaziland, Central Statistical Office. 2015b. *Swaziland 2012 demographic and housing survey: Key finding results*. Mbabane: Central Statistical Office.
- [17] Shongwe, R & Warren, C. 2010. *Practices and experiences of postnatal women in Swaziland*. Mbabane: Ministry of Health.
- [18] Leifer, G. 2008. *Maternity nursing: An introductory text. Tenth edition*. Philadelphia, PA: Saunders Elsevier.
- [19] London, ML, Ladewig, PW, Ball, JW & Bindler, RC. 2007. *Maternal and child nursing care. Second edition*. Philadelphia, PA: Pearson Prentice Hall.
- [20] United Nations Population Fund, Internal Confederation of Midwives. 2014. *The state of the world's midwifery 2014: A universal pathway. A woman's right to health*. New York: United Nations.
- [21] Rose, L & Clarke, SP. 2010. Vital signs no longer a nursing priority? *American Journal of Nursing*, vol. 110, no. 5, p. 11, 2010.
- [22] Murray, SS & McKinney, ES. 2006. *Foundations of maternal-newborn nursing. Fourth edition*. Philadelphia, PA: Saunders Elsevier.
- [23] Elliott, M & Coventry, A. 2012. Critical care: The eight vital signs of patient monitoring. *British Journal of Nursing*, vol. 21, no. 10, pp. 621-625, 2012.
- [24] Hofmeyr, GJ, Abdel-Aleem, H & Abdel-Aleem, MA. 2013. Uterine massage for preventing postpartum haemorrhage. *Cochrane Database of Systematic Reviews*, no. 7, pp. 1-37.
- [25] Hodgins, S, Pradhan, YV, Khanal, L, Upreti, S & Naresh, PKC. 2013. Chlorhexidine for umbilical cord care: Game-changer for newborn survival? *Global Health: Science and Practice*, vol. 1, no. 1, pp. 5-10.
- [26] Okour, A, Alkhateeb, M & Amarin, Z. 2012. Awareness of danger signs and symptoms of pregnancy complication among women in Jordan. *International Journal of Gynecology and Obstetrics*, vol. 118, pp. 11-14.
- [27] Kabakyenga, JK, Östergren, P, Turyakira, E & Pettersson, KO. 2011. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda, *Reproductive Health*, vol. 8, no. 33, pp. 1-10.
- [28] Pembe, AB, Urassa, DP, Carlstedt, A, Lindmark, G, Nyström, L & Darj, E. 2009. Rural Tanzanian women's awareness of danger signs of obstetric complications. *BMC Pregnancy and Childbirth*, vol. 9, no. 12, pp. 1-8.
- [29] Smith, R, Ashford, L, Gribble, J & Clifton D. 2009. *Family planning saves lives. 4th edition*. Washington, DC: Population Reference Bureau.
-