USE OF POSTPARTUM CARE SERVICES IN RURAL CENTRAL MALAWI

By

Yenupini Joyce Adams

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Nursing – Doctor of Philosophy

2016

ABSTRACT

USE OF POSTPARTUM CARE SERVICES IN RURAL CENTRAL MALAWI

By

Yenupini Joyce Adams

This dissertation examines the use of postpartum care within the context of a developing country, and more specifically, among rural communities in central Malawi. It is a three-manuscript dissertation. Manuscript one (Chapter 2), an integrative review, identifies factors affecting the use of postpartum care in developing countries, guided by the three delays model. Determinants of decision to seek care (phase I delays) included lack of women's autonomy, lack of exposure to mass media, no complications, lack of awareness about postpartum care, negative provider attitudes, low level of women's and husband's education, women's and husband's occupation, increasing number of children, and low level of household income. Easy access to a health facility was a determinant of reaching a health facility (phase II delay). Category of health facility (hospital or health center), type of health facility (public or private), and queuing at health facility were significant phase III delays.

Manuscripts two and three are based on a cross-sectional, matched-pairs survey of 70 husband-and-wife farmer dyads, who lived in rural communities in Ntcheu district of central Malawi, and had a live birth in past year. Data were collected using an interviewer-administered, structured postpartum questionnaire adapted from the World Health Organization's (WHO) Safe Motherhood Needs Assessment Questionnaires (WHO, 2001). Data analysis included descriptive statistics, bivariate, multivariate, and matched pairs/conditional logistic regression.

Manuscript two (chapter 3), examines 1) women's evaluation of postpartum care received from midwives prior to discharge in rural health facilities, and 2) husband-and-wife farmer dyads' reasons for their decisions to return or not return for one-week postpartum

visits. Women's evaluation of postpartum clinical assessments included partial assessments of blood pressure (44%); temperature (41%); abdominal exam (50%); vaginal exam/bleeding (46%); breast exam/soreness (34%); and baby exam (77%). Women also reported midwives did not: introduce themselves (50%); ask if patients had questions (44%); explain what they were doing (43%) or explain what to expect after delivery (50%). Despite this, 77% of women felt midwives paid close attention to them and 83% gave an overall positive evaluation (3.5-5 on a scale of 1-5). Top three reasons for dyads' decisions to return for postpartum visits were: advised to return, wanted exam of mother, and wanted exam of baby. Not perceiving a need for care, not being advised to return, and prior negative experiences may potentially prevent participants from returning for postpartum visits in a health facility.

Manuscript three (chapter 4) examines husbands' knowledge and attendance at their wives' postpartum care in a sample of rural husband-and-wife farmer dyads. Many husbands did not know about postpartum assessments (blood pressure, temperature, abdominal, vaginal, breast, baby exams) and education (advice on caring for baby, family planning, breastfeeding) their wives received from midwives prior to discharge. Percent agreement between dyads' responses was lower on questions on assessments than on education. The odds of reporting that the woman received each of the postpartum assessments was significantly greater among husbands than among wives, with odds ratios ranging from 4.75 to 23.22, and p-values less than 0.05. Fifty-nine percent of husbands reported they did not go with their wives for one-week postpartum visits. The top three reasons husbands gave for not attending visits were: at work/doing other work (39%), out of town (26%), and did not see the need (13%).

The results of this dissertation call for both community and health facility interventions to improve postpartum care among one of the most vulnerable and marginalized groups in Sub-Saharan Africa—women who are farmers and reside in rural areas.

This dissertation is dedicated to my daughter, Eden Adelaide Adams. You were conceived right after data collection, and has since walked this journey with me, from data analysis to final submission. You motivated me to work hard and fast, and I am proud to say we did this together! To my husband, Ellis Adjei Adams, whom I met in the first semester of the PhD program, you have since been my source of encouragement and support throughout this PhD pursuit.

ACKNOWLEDGEMENTS

What shall I say unto the Lord, all I have to say is thank you Lord! For all things are possible with God, and it is by His grace that this dissertation has come to fruition. I would like to acknowledge my funding sources for this dissertation research, including a research grant from the American Nurses Foundation (ANF), a GJEC dissertation research fellowship and dissertation completion fellowship from the Center for Gender in Global Context (GenCen), under Michigan State University's International Studies and Programs (ISP), as well as a dissertation completion fellowship from the Graduate School at Michigan State University. I am also very thankful for the generous financial support received from the American Association of Colleges of Nursing (AACN) through the AACN/Johnson & Johnson Minority Nurse Faculty Scholars Award. I am very grateful to the College of Nursing at Michigan State University for generous financial support through graduate assistantships, Graduate Office Fellowships, and the George and Margaret Lorimer Parson's Nursing Scholarship.

From the depths of my heart, I am extremely grateful to my PhD Advisor and dissertation committee chair, Dr. Barbara Smith (a.k.a. Yaya Barbara), for her support, encouragement, guidance, mentorship, wisdom, and friendship throughout this process. Dr. Smith, you were the reason why I stayed in this program, and my open-door to conducting research in an area and region that I love. Thank you for being the kind of advisor I could comfortably approach, for challenging and pushing me to go the extra mile always, and for being a worthy cheerleader – your pride in my achievements have been motivating and spurred me on. I am profoundly grateful to the rest of my dissertation committee members, Dr. Millie Horodynski, Dr. Adejoke Ayoola, and Dr. Manfred Stommel for your support, commitment and guidance. Dr. Horodynski, your thorough review of my work has always led me to have the best finished products. Your knowledge and guidance throughout these four

years is what has contributed to many of my successes. Thank you Dr. Stommel for all the methodological and statistical support. You made extra time for me in order that I could meet my timelines and deadlines, for which I am grateful. To Dr. Ayoola, thank you for being a committed mentor to me. You were the best undergraduate nursing advisor I could ask for, but your commitment to my success did not end there. You ensured that I started this PhD program, and stayed on my PhD committee from beginning to end. Your desire has always been to see me succeed, and countless times you have worked with me to this effect. Thank you to Dr. Kelly Brittain, who served on my guidance committee. Those times in my first year when I would come to your office for direction and guidance, will never be forgotten. This was a team effort, and I could not have done it without all of you.

I would like to acknowledge Dr. Lorraine Robbins, it was from her research course that my integrative review manuscript originated. Thank you for the guidance you offered in developing and writing the first draft of the integrative review as a paper in your course. I am grateful also to Heidi Schroeder, the librarian to the College of Nursing, who was very helpful in conducting the search for the integrative review manuscript. Thank you to the College of Nursing Research Center (NRC), for assistance during all stages of this dissertation study. To my friends and colleagues at the NRC, Teresa Cherry, Becky Chipchase-Vanatta, Tara Miller, Beth Soules, and Cindy Majeske , I say God bless you for the various ways you each helped me throughout the program, grant writing process, and this dissertation. I am grateful to the MSU Biomedical Research Informatics Core (BRIC) support staff, for your assistance with building and managing my survey data online.

This dissertation research would not have been possible without collaboration with Dr. Address Malata, and the Kamuzu College of Nursing (KCN) at the University of Malawi. I thank KCN for the resources provided to me on all my visits to Malawi. To Sophie, thank you for all your assistance and kindness – always so willing to help. I also thank the KCN

faculty members who took time off their busy faculty schedules to help me in the initial stages of site visits. I especially thank Dr. Alfred Maluwa and the research office at KCN, for their assistance with applying for Ethics committee approval, as well as translation and back-translation of the questionnaires. Dr. Address Malata, words cannot express how grateful I am to you and your family. Thank you for receiving me as family in your home, for the guidance, mentorship, and everything you did to make this research possible – I say *Zikomo Kwambiri*. Thank you Mr. Stewart Malata, Esther and Angela Malata – you made my stay in Malawi enjoyable and fun.

I express my gratitude to Dr. Sieglinde Snapp, and the Michigan State University *Africa RISING Project*, for assistance in the recruitment of farmers/participants for my research. I thank the two Malawian interviewers, Mr. Emmanuel Jambo and Ms. Grace Gangu, and extension officers, Mr. Kadzimbuka and Mr. Phiri, as well as our driver Mr. Bright, who helped in the recruitment and data collection process. I am also extremely grateful to all the husbands and wives from Kandeu and Nsipe, who enthusiastically agreed and participated in the study. I am grateful to all other participants in my research, including the midwives and health facility administrators, who shared rich insights for my study. I am also thankful for all the assistance I received from the Lilongwe District Office and the Ntcheu District Office. Thank you to the Ntcheu District Health Officer (DHO), for granting permission for the conduct of my research in the Ntcheu district.

I would like to acknowledge my friends and fellow doctoral students in the College of Nursing, too many to mention names, who have contributed immensely through emotional, personal, and academic support to make this dissertation possible. Special thanks particularly to Tracy Dekoekkoek, Kelly Wierenga, Eman Bajamal, Aimee Labelle, and Kendra Kamp for your friendship. I am especially grateful to Ana Kelly, who I considered my peer mentor – thank you for being there every time I needed someone who had walked that path before. I

am incredibly grateful to all my friends at the Greater Lansing First Assembly of God Church, and the Ghanaian and African communities at MSU, East Lansing, Lansing, Grand Rapids and the Greater Detroit Area, for friendships that kept me sane. Special thanks to Catherine Ikpomwonba and Doreen Achampong for your deep friendship and support. I went through a couple of life events during this program, from getting married to having a baby – and you all, my friends at the CON, church and greater Lansing community, helped and supported me through it all. Because of YOU ALL, managing life and the PhD was much more tolerable. To everyone, not mentioned here, who contributed in diverse ways to help me through this program and dissertation, I say God richly bless you.

To my parents, thank you for all the sacrifices you made for my education as a child that set the stage for my academic life. I would not be where I am today if you had not made education a priority in life. Thank you especially to my mum, who came from Ghana to help take care of my newborn daughter, so I could complete this dissertation. You are greatly appreciated…*Niipouk Mama*. To my siblings, Obed, Paulina, Dora, and Nathan, thank you for all the love and support, through thick and thin. Special thanks especially to Obed and Nathan, you have always been there for me, your love and kindness contributed greatly to making this dissertation a dream come true. Last but certainly not least, to my husband, Ellis Adams, who contributed profound emotional and personal support to make this dissertation possible. Babe, I cannot thank you enough for always being there for me, through the highs and lows of this journey. You were my biggest support system, and I could not have done this without you. Yes…we did it!

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION TO OVERALL TOPIC

1.1 Maternal Mortality

Maternal mortality in developing countries remains a major challenge despite the fact that most maternal deaths are preventable (Zureick-Brown et al., 2013). Maternal mortality is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (World Health Organization [WHO] & United Nations International Children's Emergency Fund [UNICEF], 2014, p. 4). Maternal mortality can be classified as direct or indirect. Direct deaths result from obstetric complications, interventions, omissions, incorrect treatment, or "a chain of events resulting from any of the above" (WHO & UNICEF, 2014, p. 4). Indirect deaths on the other hand result from "previously existing diseases, or from diseases that developed during pregnancy that were not due to direct obstetric causes but aggravated by physiological effects of pregnancy" (WHO & UNICEF, 2014, p. 4). The majority of maternal mortality is due to direct causes such as obstetric hemorrhage, hypertensive disorders, and sepsis/infection (Rosenfield, Min, & Freedman, 2007). An analysis of the global causes of maternal mortality indicated that hemorrhage, hypertensive disorders, and sepsis accounted for 27.1%, 14.0%, and 10.7% of maternal deaths, respectively (Say et al., 2014).

The maternal mortality ratio (MMR), defined as the number of maternal deaths per 100,000 live births, declined by forty-five percent between 1990 and 2013 globally, an average annual decline of 2.6 percent (UNICEF, 2015). This rate of decline was less than half of the 5.5 percent average needed to achieve the Millennium Development Goal 5a (MDG5a) in 2015. MDG5a aimed to reduce by three quarters, the maternal mortality ratio between 1990 and 2015 (United Nations, 2014). The majority of countries that made no progress or

insufficient progress in meeting their MDG5a goal were in Sub-Saharan Africa (Alkema et al., 2015; Zureick-Brown et al., 2013).

1.2 Postpartum Care

Lack of access to postpartum care, especially during the immediate postpartum period, aggravates the problem of maternal mortality. About 50 to 71% of maternal deaths globally occur during the postpartum period, while only 11-17% occur during labor and delivery (Islam, 2007). The postpartum period is defined as the time from 1 hour after delivery of the placenta to six weeks (42 days) after delivery of the baby (Chen et al., 2014; WHO, 2010). It consists of the immediate (first 24 hours), early (days 2-7), and late (days 8-42) postpartum periods (WHO, 2010). Postpartum care is critical in the prevention and reduction of maternal mortality; however, it is often neglected. The median national coverage of postnatal visits for the mother in the WHO *Countdown to 2015 decade report* was only forty-one percent (Bryce, Black, & Victora, 2013). This same report indicated that 45 out of 68 countries had no data on postpartum care (WHO & UNICEF, 2010).

Postpartum care includes the prevention, early detection and treatment of postpartum complications, advice on contraception, family planning and nutrition in the first six weeks after delivery (Nabukera et al., 2006). The need for postpartum care, until recently, was less well recognized in developing countries (WHO, 2010). Antenatal care did and still does receive more resources and is more widely implemented within maternal health programs than postpartum care. Systematic and regular postpartum care is inadequate in developing countries, even for women who deliver in a health facility (Islam, 2007). Nursing interventions during the postpartum period can decrease maternal mortality by targeting interventions at the most vulnerable populations, mostly the poor and rural populations (Ronsmans & Graham, 2006).

1.3 Rural-Urban Inequalities

Rural-urban inequalities in the use of postpartum care services are prevalent in many developing countries (Metwally et al., 2013); consistent with this state of affairs, substantial differences in maternal mortality ratios exist between urban and rural areas in many countries in Sub-Saharan Africa (Ronsmans & Graham, 2006). Preventing the deaths of mothers is challenging in areas where access to postpartum care services is limited. Women in rural areas have less access to health services. Place of residence was found to be a significant predictor of reaching a health facility (Khanal, Adhikari, Karkee, & Gavidia, 2014) and receiving postpartum care within 2 days of delivery (Rahman, Haque, & Zahan, 2011). In Malawi, for example, a review of maternal deaths in a rural hospital indicated that transportation delays occurred in 74% of all maternal death cases (Vink, TerHaar, Chizimba, & Stekelenburg, 2013). Thus, postpartum care interventions are especially needed among women living in rural communities. However, evidence of the determinants of postpartum care service use in developing countries is still incomplete for rural women, especially for those women with farming as their occupation (Dhakal et al., 2007). To develop effective interventions in the postpartum period, identifying factors affecting the use of postpartum care services among rural women is of critical importance.

1.4 Male Involvement

The importance of including men in maternal health interventions is becoming increasingly recognized (Guadagno, Mackert, & Rochlen, 2013). Husbands have a role to play in ensuring that their wives' health care needs are met. Studies have found that, if men are more educated about pregnancy and childbirth, they are more likely to be able to identify emergency obstetric complications and take their partners to get medical care (Guadagno et al., 2013). In rural areas in Sub-Saharan Africa, effective maternal health education interventions depend on including men, because the ability of women to seek health care

services or implement lessons learned from health education interventions is usually determined by their husbands (Mullany et al., 2007). The WHO now recognizes the importance of men in maternal health, and strongly recommends interventions that promote male involvement during pregnancy, childbirth, and the postpartum period. This will likely increase use of skilled care, timely use of care for obstetric complications, and support improved self-care and home care practices for women (WHO, 2015). To date, very few postpartum care studies include men.

1.5 Healthcare Professionals

The first 24 to 48 hours after delivery poses the highest risk for maternal mortality, thus, the World Health Organization (WHO) recommends that mothers should receive individualized care during this period under the direct or indirect supervision of a health care professional (WHO, 2010). However, insufficient number of health care professionals limit women's access to adequate postpartum care in health facilities, especially in developing countries. The WHO and UNICEF published the *Countdown to 2015 decade report* on maternal, newborn, and child survival in 2010. The report indicated that only 22% of countries met the 23 doctors, nurses and midwives per 10,000 people threshold necessary to deliver essential health services (WHO & UNICEF, 2010). A further challenge is the unequal distribution of healthcare workers between urban and rural areas. Rural areas are predominantly staffed with nurse technicians and medical assistants (Comps Thorsen et al., 2012).

In Malawi, nurses/midwives are the main primary healthcare providers, providing the bulk of maternity care services to women (Bradley et al., 2015). Using 2008 health worker census data, there were 3,896 nurses/midwives in Malawi, which translates into about 0.03 nurses/midwives per 10,000 population (Nove, 2011). There is a shortage of nurses/midwives in health facilities in Malawi, with most rural health centers being severely understaffed

(Kongnyuy et al., 2009). Very few health facilities achieve the required minimum staffing, especially at nights and weekends (Bradley et al., 2015).

Midwifery education in Malawi has been part of nursing education. Prior to 1990, all students trained at the bachelors level in nursing also received one year of midwifery training; after 1990, midwifery training as part of bachelors in nursing program was no longer compulsory, but optional to those interested (Nove, 2011). Nurse/midwives in Malawi either have a bachelor's degree (registered nurse/midwife or nursing officer) or a diploma in nursing and midwifery (nurse midwife technician). Registered nurses usually perform managerial roles in health facilities, and are primarily located at district and central hospitals (Government of Malawi, 2011). Nurse Midwife Technicians are the primary maternity healthcare providers in health centers and rural hospitals and are trained through a 3-year diploma program (Government of Malawi, 2011).

1.6 Conceptual Framework

Thaddeus and Maine (1994) referred to socioeconomic and cultural factors, health facility accessibility, and quality of care issues as important factors influencing the use of emergency obstetric care. They proposed the "three delays model" for studying maternal mortality and access to emergency obstetric care (Figure 1.1). The model is based on the premise that delays to accessing obstetric care have three phases which interrupt women from receiving care, and become pertinent factors that contribute to maternal deaths (Win, Vapattanawong, & Vong-ek, 2015). The three phases are: 1) delay in deciding to seek care on the part of the individual, the family, or both; 2) delay in reaching a health care facility; and 3) delay in receiving adequate care at the facility (Thaddeus & Maine, 1994).

Linkages/Relationships: The phases are placed in a temporal order beginning from the onset of complications to treatment. The three phases are not necessarily mutually exclusive, as there may be more than one delay present in a maternal death (Win et al., 2015).

Accessibility issues may influence the decision to seek care (phase I); however, it also determines how much time is spent trying to get to a particular health facility (phase II). Poor quality of care in a health facility contributes to phase III delay, but can also affect the decision to seek care (phase I delay) (Win et al., 2015).

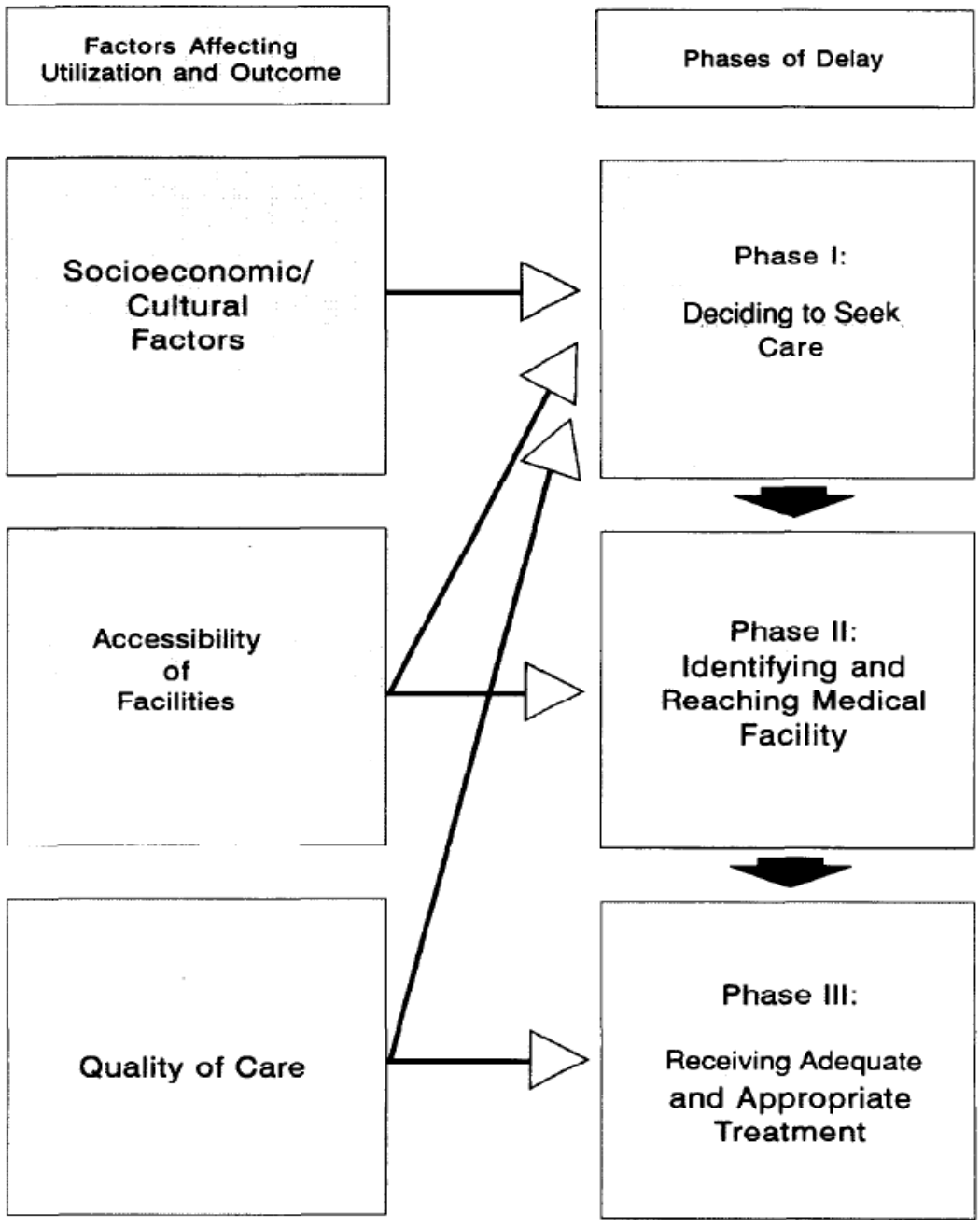


Figure 1.1. *The Three Delays Model*
Source: Thaddeus and Maine (1994)

Phase I Delay: Factors affecting the decision to seek care include 1) socioeconomic and cultural factors such as educational status, economic status, women's status/lack of autonomy, and recognition of complications; 2) perceived accessibility; and 3) perceived quality of care in health facilities (Thaddeus & Maine, 1994). ***Phase II Delay*** has to do with the actual accessibility of health facilities. Delays in reaching a health care facility include factors such as the distribution and location of health facilities, distance (travel time), transportation problems and costs that extend ability to pay (Thaddeus & Maine, 1994). ***Phase III Delay:*** Delays in receiving adequate care (per facility protocols/guidelines) involve issues such as poorly staffed facilities, lack of skills of providers, poorly equipped facilities, and inadequate management and referral systems (Thaddeus & Maine, 1994).

Many studies that have employed the three delays model were conducted as maternal death reviews in developing countries (Combs Thorsen, Sundby, & Malata, 2012; Gelany et al., 2015; Mohammed, Elnour, Mohammed, Ahmed, & Abdelfattah, 2011; Shah et al., 2009; Win et al., 2015). For example, a review by Shah et al. (2009) showed that the first, second, and third delays were present in 71%, 74%, and 48% of maternal deaths, respectively. The most frequent reasons for delays were lack of awareness, husband not available to make decision, costs or lack of finances, long distance, transportation problems, late referral, absence of health workers, emergency drugs not available, difficulty getting blood, and failure of communications (Gelany et al., 2015; Mohammed et al., 2011; Shah et al., 2009). One woman with postpartum hemorrhage bled for 7 hours while waiting for her husband to return and make the decision to seek care (Mohammed et al., 2011). Further, a maternal death review in Malawi indicated women had symptoms from 2 days up to a month before they or their families decided to seek care (Combs Thorsen et al., 2012).

The three delays model was used to guide this dissertation study. The model was appropriate as a guide, because it was specific to studying obstetric care. Obstetric

complications, especially in the immediate postpartum period, are the leading causes of maternal deaths in many developing countries (Yanagisawa et al., 2006). Besides, the model is widely known and has been applied in several developing countries. Since many studies that have applied the three delays model have relied on data from maternal death reviews (Combs Thorsen et al., 2012; Gelany et al., 2015; Mohammed et al., 2011; Shah et al., 2009; Win et al., 2015), this dissertation study extended the application of the three delays model to postpartum care using a survey to focus, in particular, on decisions to seek postpartum care, the knowledge and roles of husbands in postpartum care service use, and evaluation of postpartum care received in health facilities.

1.7 Organization of Dissertation

This dissertation is organized into five chapters. It employs the three-manuscript dissertation format: chapters 2, 3, and 4 each represent three separate manuscripts that address an aspect of the dissertation's central theme – use of postpartum care services. Chapter 1 is an introduction that gives a background of the main concepts of this dissertation, and describes the conceptual framework used to guide the dissertation. Chapter 5 provides a summary of the dissertation across all three manuscripts and discusses key findings and implications for future nursing research, practice, and policy. The three manuscripts in this dissertation include: 1) an integrative review article on factors affecting the use of postpartum care services in developing countries (chapter 2); 2) a data based article on use and evaluation of postpartum care services in rural Malawi (chapter 3); and 3) a data based article on husbands' knowledge and attendance at their wives' postpartum care in rural Malawi (Chapter 4). There is considerable overlap between chapters given that each chapter is tied to the same central theme and written to be a stand-alone, publishable manuscript.

Chapter 2 consists of an integrative review paper to identify factors affecting the use of postpartum care services in developing countries. The integrative review framework by

Whittemore and Knafl (2005) guided the conduct of the review. The three delays model guided synthesis of results. From the review, it was determined that interventions aimed at decreasing delays in the decision to seek care should include husbands and family members. It was also found that a critical need exists for interventions that focus on women in agriculture, farmers and wives of farmers because this population had significantly lower levels of postpartum care service use.

Chapters 3 and 4 are from primary survey data collected through structured interviews using a cross-sectional design. The study was conducted in rural communities in two extension planning areas (EPAs) in the Ntcheu district of central Malawi (Figure 1.2). This primary study addresses some of the gaps identified from the integrative review, by examining use of postpartum care among husband-and-wife dyads, who are farmers in rural communities. Chapter 3 examines husband-and-wife farmer dyads' decisions to return to a health facility for one-week postpartum visits, as well as examines women's evaluation of postpartum care services received after delivery in health facilities. Chapter 4 examines husbands' knowledge and attendance at their wives' postpartum care in a sample of rural husband-and-wife farmer dyads. Specifically, this chapter explores how much husbands know about postpartum care services their wives received after delivery, and whether husbands accompany their wives for postpartum care visits.

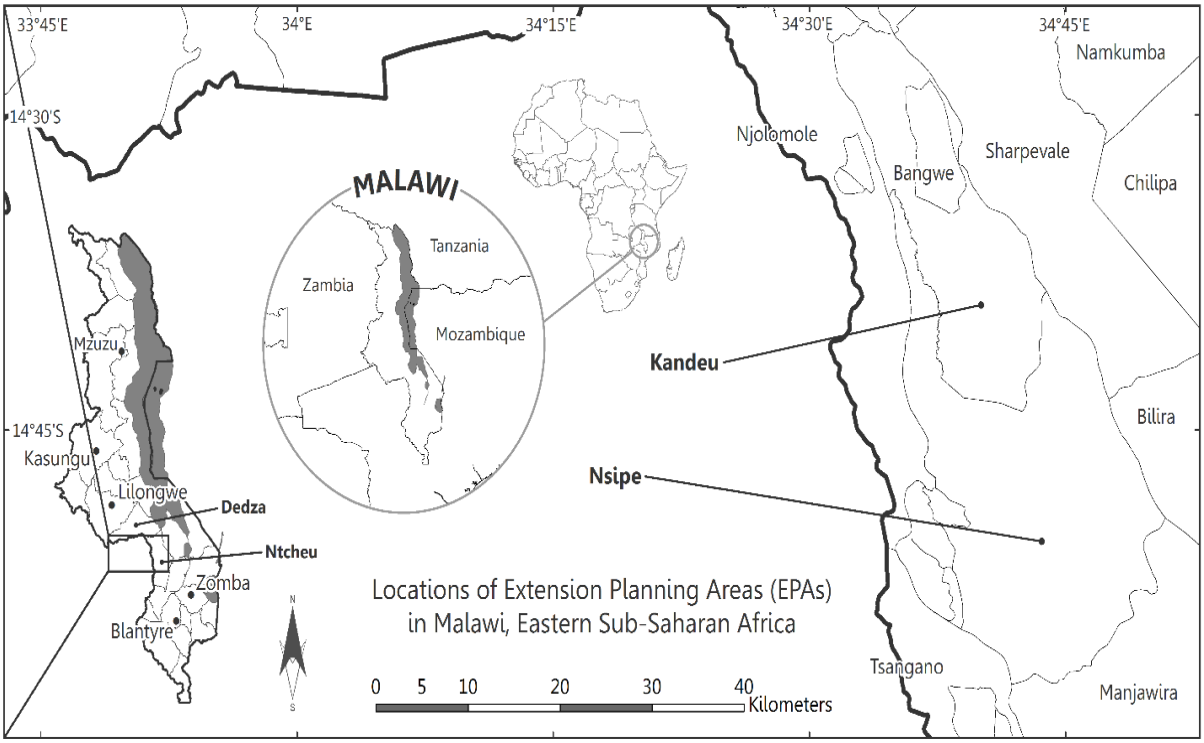


Figure 1.2. *Map of Study Area*

REFERENCES

REFERENCES

Alkema, L., Chou, D., Hogan, D., Zhang, S., Moller, A. B., Gemmill, A., ... & Say, L. (2015). Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN maternal mortality estimation inter-agency group. *The Lancet*, 387(10017), 462-474

Bradley, S., Kamwendo, F., Chipeta, E., Chimwaza, W., de Pinho, H., & McAuliffe, E. (2015). Too few staff, too many patients: a qualitative study of the impact on obstetric care providers and on quality of care in Malawi. *BMC pregnancy and childbirth*, *15*(1), doi: 10.1186/s12884-015-0492-5

Bryce, J., Black, R. E., & Victora, C. G. (2013). Millennium development goals 4 and 5: Progress and challenges. *BMC Medicine*, 11(1), doi: 10.1186/1741-7015-11-225

Chen, L., Qiong, W., van Velthoven, M.H., YanFeng, Z., ShuYi, Z., Ye, L., . . . Ting, Z. (2014). Coverage, quality of and barriers to postnatal care in rural Hebei, China: A mixed method study. *BMC Pregnancy and Childbirth*, 14(31). doi**:** 10.1186/1471-2393-14-31

Combs Thorsen, V., Sundby, J., & Malata, A. (2012). Piecing together the maternal death puzzle through narratives: The three delays model revisited. *PLoS One, 7*(12), e52090. doi: 10.1371/journal.pone.0052090

Dhakal, S., Chapman, G.N., Simkhada, P.P., Teijlingen, E.R.v., Stephens, J., & Raja, A.E. (2007). Utilization of postnatal care among rural women in Nepal. *BMC Pregnancy and Childbirth, 7*(19), doi: 10.1186/1471-2393-7-19

Gelany, S., Mansour, M., & Hassan, M. (2015). The three delays of maternal mortality in a public-sector tertiary teaching hospital: Is there a para-digm shift. *Gynecology and Obstetrics Research Open Journal*, 2(2), 52-56.

Government of Malawi (2011). Nurse/Midwife Training Operational Plan. Field Assessments, Analysis and Scale-Up Plans for Nurse Training Institutions. Retrieved from https://www.k4health.org/sites/default/files/Malawi_National%20Nurse%20Training%20Operational%20Plan.pdf

Guadagno, M., Mackert, M., & Rochlen, A. (2013). Improving prenatal health setting the agenda for increased male involvement. *American Journal of Men's Health*, 7(6), 523-6. doi: 10.1177/1557988313490785

Islam, M. (2007). The safe motherhood initiative and beyond. *Bulletin of the World Health Organization, 85*(10). doi: 10.2471/BLT.07.045963

Kongnyuy, E., Mlava, G., & van den Broek, N. (2009). Facility-based maternal death review in three districts in the central region of Malawi: An analysis if causes and characteristics of maternal deaths *Women's Health Issues, 19*, 14-20. doi: 10.1016/j.whi..2008.09.008

Metwally, A.M., Abdel-Latif, G.A., Salama, S.I., Tawfik, A., Elmosalami, D.M., & Mohsen, A.M.A. (2013). Care seeking behaviors of rural women in Egypt: Community based study. *Journal of Applied Sciences Research, 9*(6), 3767-3780.

Mohammed, A.A., Elnour, M.H., Mohammed, E.E., Ahmed, S.A., & Abdelfattah, A.I. (2011). Maternal mortality in kassala state-eastern Sudan: Community-based study using reproductive age mortality survey (ramos). *BMC Pregnancy and Childbirth, 11*(1). doi: 10.1186/1471-2393-11-102

Mullany, B.C., Becker, S., & Hindin, M. (2007). The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: Results from a randomized controlled trial. *Health Education Research, 22*(2), 166-176.

Nabukera, S.K., Witte, K., Muchunguzi, C., Bajunirwe, F., Batwala, V.K., Mulogo, E.M., . . . Salihu, H.M. (2006). Use of postpartum health services in rural Uganda: Knowledge, attitudes and barriers. *Journal of Community Health, 31*(2), 84-93.

Nove, A. (2011). Midwifery in Malawi: In-depth country analysis. *Background document prepared for the State of the World's Midwifery Report 2011*. Unpublished.' Retrieved from http://www.helse-bergen.no/en/OmOss/Avdelinger/internasjonalt-samarbeid/prosjekt/malawi/Documents/Malawi%20the%20state%20of%20the%20worlds%20midwifery.pdf

Rahman, M.M., Haque, S.E., & Zahan, M.S. (2011). Factors affecting the utilisation of postpartum care among young mothers in Bangladesh. *Health and Social Care in the Community, 19*(2), 138-147.

Ronsmans, C., & Graham, W.J. (2006). Maternal mortality: Who, when, where, and why. *The Lancet, 368*(9542), 1189-1200.

Rosenfield, A., Min, C.J., & Freedman, L.P. (2007). Making motherhood safe in developing countries. *New England Journal of Medicine, 356*(14), 1395-1397.

Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A. B., Daniels, J., ... & Alkema, L. (2014). Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*, *2*(6), e323-e333.

Shah, N., Hossain, N., Shoaib, R., Hussain, A., Gillani, R., & Khan, N.H. (2009). Socio-demographic characteristics and the three delays of maternal mortality. *Journal of the College of Physicians and Surgeons Pakistan 19*(2), 95-98.

Sullivan, T.R., & Hirst, J.E. (2011). Reducing maternal mortality: A review of progress and evidence-based strategies to achieve millennium development goal 5. *Health Care Women International, 32*(10), 901-916. doi: 10.1080/07399332.2011.603867

Thaddeus, S., & Maine, D. (1994). Too far to walk: Maternal mortality in context. *Social Science Medicine, 38*(8), 1091-1110.

UNICEF. (2015). *Maternal mortality has declined steadily since 1990, but not quickly enough to meet the MDG target*. Retrieved from http://data.unicef.org/maternal-health/maternal-mortality

United Nations. (2014). *The millennium development goals report 2014*. Retrieved from http://www.un.org/millenniumgoals/2014%20MDG%20report/MDG%202014%20English%20web.pdf

Vink, N.M., deJonge, H.C.C., TerHaar, R., Chizimba, E.M., & Stekelenburg, J. (2013). Maternal death reviews at a rural hospital in Malawi. *International Journal of Gynecology and Obstetrics,* 120, 74-77.

WHO. (2010). *WHO technical consultation on postpartum-postnatal care*. Geneva, Switzerland: Author

WHO, & UNICEF. (2010). *Countdown to 2015 decade report (2000–2010): Taking stock of maternal, newborn and child survival.* Washington, DC: Author

WHO, & UNICEF. (2014). *Trends in maternal mortality: 1990 to 2013. Estimates by who, unicef, unfpa, the world bank and the united nations population division*. Geneva, Switzerland: Author

Win, T., Vapattanawong, P., & Vong-ek, P. (2015). Three delays related to maternal mortality in Myanmar: A case study from maternal death review, 2013. *Journal of Health Research, 29*(3), 179-187.

Yanagisawa, S., Oum, S., & Wakai, S. (2006). Determinants of skilled birth attendance in rural Cambodia. *Tropical Medicine and International Health, 11*(2), 238-251. doi: 10.1111/j.1365-3156.2005.01547.x

Zureick-Brown, S., Newby, H., Chou, D., Mizoguchi, N., Say, L., Suzuki, E., & Wilmoth, J. (2013). Understanding global trends in maternal mortality. *International Perspectives on Sexual and Reproductive Health,* 39(1). doi: 10.1363/3903213

CHAPTER 2

AN INTEGRATIVE REVIEW OF FACTORS AFFECTING THE USE OF POSTPARTUM CARE SERVICES IN DEVELOPING COUNTRIES

Abstract

Aim: To identify factors affecting the use of postpartum care services in developing countries.

Background: The majority of maternal mortality (50-71%) occurs in the postpartum period, yet, many women in developing countries do not receive any postpartum care.

Design: An integrative literature review

Data Sources: Electronic databases of PubMed, CINAHL, Global Health, and Embase, and the grey literature were searched for studies conducted in developing countries. Subject headings and keywords such as “Postnatal Care” “Developing Countries” “Health Services Accessibility” were used and limited to English. No publication date limit was imposed.

Review Methods: Primary studies were reviewed using the integrative review framework by Whittemore and Knafl (2005) as a guide. The three phases of delay framework guided synthesis of results.

Results: The initial search in 2015 yielded a total of 868 articles but only 10 studies met inclusion criteria. Three additional articles were included from the updated search in 2016. A total of 13 studies that met inclusion criteria were included in the review. Factors that significantly affect women's decision to seek postpartum care services (phase I delay factors) included lack of women's autonomy, lack of exposure to mass media, no pregnancy/delivery/postpartum complications, lack of awareness of existence of postpartum care, negative provider attitude, lower level of women's and husband's education, women's

occupation, husband's occupation, increasing number of children, and lower level of household income. Perceived easy access to a health facility was a significant predictor of reaching a health facility (phase II delay). Category of health facility (hospital or health center), type of health facility (public or private), and queuing at health facility were significant phase III delay factors.

Conclusion: Although study findings provided insight into factors that affect women's decision to seek care, further research is needed to establish significant health facility factors and accessibility factors that affect use of postpartum care services.

KEYWORDS: Integrative review, literature review, postpartum care, postnatal care, developing countries, maternal health, barriers to maternal care, health service utilization, determinants of care

2.1 Introduction

Postpartum care is often a neglected aspect of maternal healthcare (Mrisho et al., 2009). More than half of all maternal mortality (50-71%) occurs in the postpartum period (Islam, 2007), yet many women in developing countries do not receive any postpartum care. The postpartum period is defined as the time from one hour after delivery of the placenta to six weeks (42 days) after delivery of a baby (Chen et al., 2014). The neglect of postpartum care is apparent in the percentages of women who do not receive any postpartum care after delivery in several developing countries: 74.1% in Uganda, 55.1% in Kenya, 55.2% in Nigeria, 49.8% in Zambia, 69.3% in Bangladesh, 57.2% in India, 67% in Nepal, 56.9% in Pakistan, and 64.4% in Haiti (Wang, Alva, Wang & Fort, 2011). In Malawi, 48% of women do not receive any postpartum care after delivery (Malawi National Statistical Office & ICF Macro, 2011). Clearly, a need exists to increase the number of women who receive postpartum care in developing countries.

About 80% of postpartum mortality occurs in the first week after delivery (Wang et al., 2011). Life-threatening complications that occur after delivery are often unpredictable and require rapid response (WHO & UNICEF, 2010). Postpartum care is essential in the management of postpartum hemorrhage, a major cause of maternal deaths in developing countries, especially within 48 hours after delivery (Wang et al., 2011). Assisting women to access timely postpartum care is important to enable healthcare providers to identify and treat postpartum complications promptly, thereby preventing catastrophic consequences (Titaley, Hunter, Heywood, & Dibley, 2010).

To develop effective interventions that will aid in decreasing postpartum maternal mortality, it is critical to identify the major factors that affect the use of postpartum care services. Systematic and integrative reviews are a first step in providing information about workable interventions; however, there is a scarcity of systematic and integrative reviews that

focus on determinants of postpartum care use of mothers in developing countries. One of the few studies available is a systematic review of inequities in postnatal care in low-and middle-income countries by Langlois et al. (2015), which focused on socioeconomic, geographical, and demographic inequities in use of care. Studies not reporting quantitative results were excluded. Their review concluded that postnatal care services varies with socioeconomic status and place of residence (Langlois et al., 2015). This integrative review contributes to the postpartum care literature, by synthesizing factors affecting the use of postpartum care (refers to care of the mother only [Mriso et al., 2009]), from primary research studies employing qualitative, quantitative, and mixed methodologies, according to three delays that can lead to postpartum mortality: 1) delays in deciding to seek care, 2) delays in reaching a health facility, and 3) delays in receiving adequate care at the health facility (Thaddeus & Maine, 1994), in order to identify opportunities for interventions. This integrative review is different from the review published by Langlois et al. (2015) in that: 1) it includes qualitative studies in addition to quantitative and mixed methods; 2) it includes primary or original research studies; and 3) results are synthesized according to the three delays model.

2.1.1 Background

Each day, about 830 women die from preventable pregnancy or childbirth-related complications around the world (WHO, 2015). Maternal mortality remains a major global health concern and there is a huge disparity in the maternal mortality ratios between developing and developed countries (Tarekegn, Lieberman, & Giedraitis, 2014). Ninety-nine percent of global maternal mortality occurs in developing countries, with more than half of these deaths occurring in sub-Saharan Africa (WHO, 2015). The maternal mortality ratio (MMR) in developing countries is 19 times higher than in developed countries. The lifetime risk of maternal death for women in developing countries is 1 in 180 compared to 1 in 4900 women in developed countries (WHO, 2015).

The impact of maternal mortality goes well beyond the death of a woman; it has life-long consequences for her infant, her other children, her family, and the community at large (Piane, 2008). Recent work shows that when mothers die, their babies can suffer from malnutrition due to lack of breastfeeding, and inadequate artificial feeding can kill the infant, or increase the risk of infection or stunting (Miller & Belizan, 2015). A longitudinal study in Ethiopia indicated that eighty-one percent of infants, whose mothers died, also died (Moucheraud et al., 2015). Children may also suffer from disrupted education and living arrangements, and early marriage for the girl child (Miller & Belizan, 2015). Older children, especially girls, often drop out of school to care for their younger siblings, contribute to household chores, and/or farm labor (Molla, Mitiku, Worku, & Yamin, 2015). In a study in rural Malawi, maternal deaths resulted in long term health and social impacts in children related to nutrition, education, employment, early marriage and pregnancy (Bazile et al., 2015). Moreover, the death of a mother is accompanied by economic hardships and poverty due to huge debts from hospital bills, funeral costs, and time away from paid labor to perform funeral ceremonies and rites (Kes et al., 2015; Miller & Belizan, 2015; Molla, Mitiku, Worku, & Yamin, 2015).

The majority of maternal deaths occur in the six weeks following delivery in developing countries (Islam 2007; Wang et al., 2011). Postpartum care after delivery is key in reducing maternal mortality ratios in developing countries, where postpartum hemorrhage, postpartum sepsis, hypertensive disorders, and complications of abortion account for 80% of maternal mortality (Vink, deJonge, TerHaar, Chizimba, & Stekelenburg, 2013). Timely postpartum care is essential in the management of these complications, especially postpartum hemorrhage, the major cause of maternal deaths in developing countries (Wang, Alva, Wang, & Fort, 2011). However, many women in developing countries have no access to postpartum care after delivery, hence; their risk of dying is high. On average, about 40% of all women

with a live birth in developing countries do not receive any postpartum care check-ups (WHO, 2010).

To identify factors affecting the use of postpartum care, the three delays model was used to guide this study (Thaddeus & Maine, 1994). According to the model, delays to accessing obstetric care include three phases: 1) delay in deciding to seek care on the part of the individual, family, or both, 2) delay in reaching a health care facility, and 3) delay in receiving care at the facility. The model identified several factors affecting the decision to seek care on the part of the individual or family. The three major factors include: 1) socioeconomic and cultural issues, such as education and economic status, women's status and autonomy, and recognition of complications; 2) perceived accessibility and 3) perceived quality of care in health facilities (Thaddeus & Maine, 1994). Delays in reaching a health facility result from the distribution and location of health facilities, distance (travel time), lack of transportation, and an inability to cover costs (Thaddeus & Maine, 1994). Delays in receiving adequate care at a health facility are related to poorly staffed and equipped facilities, and inefficient management and referral systems (Thaddeus & Maine, 1994).

2.2 The Review

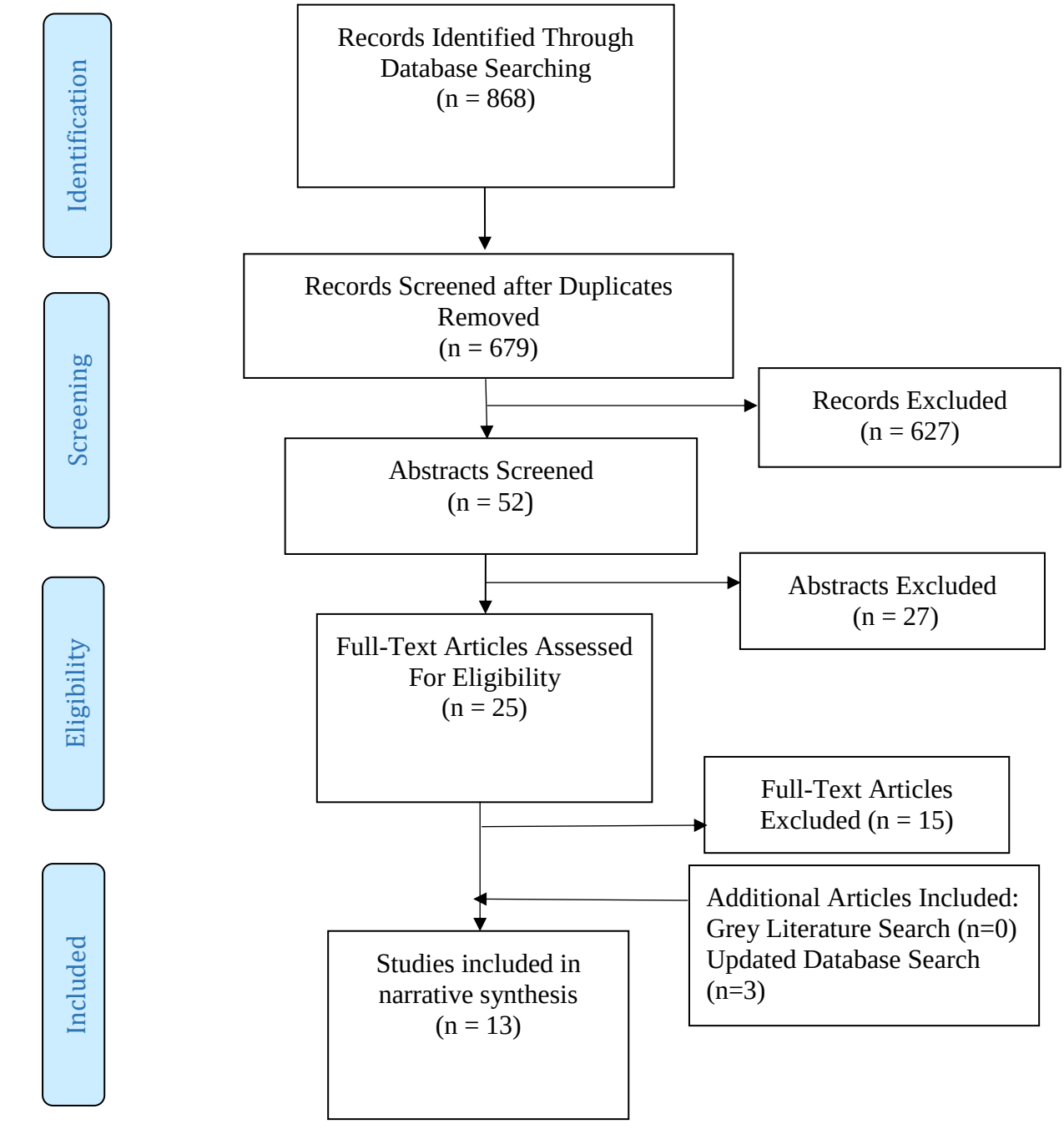
2.2.1 Aim

This integrative review aims to identify factors affecting the use of postpartum care services in developing countries.

2.2.2 Design

An integrative review of primary quantitative, qualitative, and mixed methods studies that met inclusion criteria was conducted. The integrative review framework by Whittemore and Knafl (2005) guided the conduct of the review. This framework is useful for reviewing primary studies with different methodologies. The Preferred Reporting Items for Systematic

Reviews and Meta-Analysis (PRISMA) flow diagram was used to guide data extraction (Moher, Liberati, Tetzlaff, & Altman, 2009). Figure 2.1 depicts the flow diagram of the search process.



Adapted from: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

Figure 2.1. *Flow of Information through the Phases of the Search Process*

2.2.3 Search Methods

The initial search strategy was developed in 2015 by the first author and a university health science librarian for the PubMed database. Subject headings and key words used in the search process were organized in the following categories: overall topic, setting, and specific focus for the review. No publication date limit was imposed; however, the search was limited to studies published in English. Then, the initial search strategy was expanded to include the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Global Health, and EMBASE and a comprehensive search of these electronic data bases was performed. Table 2.1 demonstrates the search process used for PubMed. The search was updated in 2016 to include any articles published in 2015- June 2016 that met inclusion criteria. Grey literature was also searched using Open Grey, OAlster, Scopus, and Conference Papers Index.

2.2.4 Search Outcome

The initial search yielded a total of 868 studies: 283 from PubMed, 66 from CINAHL, 349 from Global Health, and 170 from EMBASE. The 868 records identified were exported into Endnote X6 Reference Manager Software. After removal of duplicates, 679 records remained for independent review by two reviewers, using the inclusion and exclusion criteria, and resolved any disagreements by consensus. Of the 679 records, 627 records were identified as not applicable to the focus of the review. The remaining 52 abstracts were further examined using the inclusion and exclusion criteria. Table 2.2 presents the inclusion and exclusion criteria used for the review. Studies were also excluded, if the full text article could not be accessed (n=5). Twenty-five full text articles were examined for eligibility, 15 of which were excluded for not meeting inclusion criteria. Three additional articles were included from the updated search in 2016, but none from the grey literature search met inclusion criteria. A total of 13 articles were included in the integrative review (Figure 2.1).

Table 2.1. *Search Process for PubMed Database*

Search Category	MeSH Headings and Key Words
Overall Review Topic	("Postnatal Care"[Mesh] OR "postnatal care" OR "postpartum care")
Setting /Where Study was Conducted	("Developing Countries"[Mesh] OR "developing country" OR "developing countries" OR "third world" OR "third-world" OR "under developed country" OR "under developed countries" OR "under developed nation" OR "under developed nations" OR "developing nation" OR "developing nations" OR "under-developed country" OR "under-developed countries" OR "under-developed nation" OR "under-developed nations" OR "low-income countries" OR "low-income country" OR "low income countries" OR "low income country" OR "low-income nation" OR "low-income nations" OR "low income nation" OR "low income nations" OR "resource poor countries" OR "resource poor country" OR "resource-poor country" OR "resource-poor countries" OR "resource poor nation" OR "resource poor nations" OR "resource-poor nations" OR "resource-poor nations" OR Africa*)
Specific Focus	("Health Services Accessibility"[Mesh] OR access* OR utiliz* OR barrier* OR obstacle* OR challeng* OR determinant* OR "health services")

Table 2.2. *Inclusion and Exclusion Criteria*

Inclusion Criteria	Exclusion Criteria
Studies on use, utilization, barriers, and determinants of postpartum care services	Studies on postpartum care that did not address factors affecting use/utilization of care. Studies on other maternal health services without addressing factors affecting use of postpartum care services
Studies conducted in developing countries	Studies conducted in developed countries
Primary research studies	Secondary analysis of DHS data, population data, national surveys
Studies on postnatal care with a focus on care utilization for the mother	Postnatal care studies about the newborn/focus on postnatal infant services utilization
	Studies on HIV specific care, contraception/family planning specific care, and program evaluations

2.2.5 Quality Appraisal

A quality appraisal was conducted for each of the 13 included studies. Quality was assessed using a critical appraisal checklist by Fowkes & Fulton (1991). This checklist for critical appraisal of research was chosen, because it is applicable to cross-sectional designs. The checklist helps to determine if the methods and results of the research are sufficiently valid to produce useful information (Fowkes & Fulton, 1991). The detailed appraisal includes the following six guidelines in the form of questions: study design appropriate to objectives, study sample representative, control group acceptable (if applicable), quality of measurements and outcomes, completeness, and distorting influences (Fowkes & Fulton, 1991). Each of these questions includes a checklist of criteria that is evaluated as major problem = ++, minor problem = +, no problem = 0, and not applicable = NA. All studies were retained in the review, because none had any major problems.

2.2.6 Data Abstraction

A data abstraction table was created and recorded information from the included studies on author, year, country, study design, setting, sample size, participants, sample selection criteria, data collection methods, and relevant findings. Table 2.3 presents a description of included studies.

Table 2.3. *Included Study Descriptions*

Author (s) (Year)	**Country**	**Design and Setting Data Collection Method**	**Participants and Sample Size**	**Sample Selection Criteria**	**Outcome Measured**
Abushaikha & Khalaf (2014)	Jordan	Qualitative design 3 health care centers 6 Focus group discussions	Women who delivered during past 3 months and health care workers Age: women 18-45 years. Health care providers 21-45 years Sample size: 24 women and 30 health care providers (15% women and 10% health workers recruited did not attend focus groups)	Purposive sample of women	Decision to use postpartum care services
Dhakal et al. (2007)	Nepal	Cross-sectional Survey 2 neighboring villages Semi-structured questionnaire	Women who had a baby less than 24 months old (2 years) Age: 15-49 years Sample size: 150	Convenience sample of women	Use of postpartum care within 48 hours and 42 days after delivery

Table 2.3 (cont'd)

Ejaz & Ahmad (2013)	Pakistan	Cross-sectional survey Rural areas of district Interviews due to literacy	Primigravida (first time mothers) within 6 weeks after delivery Sample size: 205	Multistage and purposive sampling	Use of postpartum care
Idris et al. (2013)	Nigeria	Cross-sectional survey Semi-urban community Structured interviewer-administered questionnaire	Women who delivered in the 24months (2 years) preceding the survey Age: 15-49 years Sample size: 150	Multistage sampling technique	Use of postpartum care
Islam & Odland (2011)	Bangladesh	Cross-sectional Survey 3 sub-districts of Bandarban District Mixed Methods (Questionnaire and In-depth interviews)	Women who delivered 5 years ago or less Age: <20 to >40 Respondents (Mru leaders, women, traditional midwives, village doctors, school teachers, health and NGO workers) Sample Size: 374 women 26 respondents	Purposive sampling	Postnatal care visits
Izudi & Amongin (2015)	Uganda	Cross-sectional Survey 9 health facilities Structured questionnaire	Delivered within past year (but >1 week ago) Age: 15-49 years Sample Size: 357	Systematic random sampling followed by convenience sampling at selected health facilities	Use of postpartum care 2-7 days after delivery

Table 2.3 (cont'd)

Metwally et al. (2013)	Egypt	Cross-sectional Survey 23 rural villages of 4 chosen districts Structured Interview using standardized questionnaire	Women in the postnatal period Age: <20 to >30 Sample Size: 137	Randomly selected	Use of postpartum care within 40 days after delivery
Nabukera et al. (2006)	Uganda	Qualitative Narrative Inquiry 2 matched rural communities One-on-one interviews	Key informants (community leaders, political leaders, health care providers, women leaders, community members) Sample Size: 50	Purposefully selected	Use of postpartum care
Nkwabong et al. (2015)	Cameroon	Cross-sectional Survey University Teaching Hospital Data collection form	2 months postpartum Age: <20 to >35 years Sample Size: 120	Medical chart reviews to select women who had not attended 6 week postpartum visits	6 week postpartum care visit
Susuman (2015)	South Africa	Cross-sectional survey 3 selected areas of OR Tambo District Questionnaire	Age: 15-49 years Sample Size: 345 (out of 422 sampled)	Simple random sampling	Use of postpartum care within 2 months after birth

Table 2.3 (cont'd)

Titaley et al. (2010)	Indonesia	Qualitative Study 6 villages in 3 districts 20 Focus group discussions and 165 in-depth interviews	119 mothers and 40 fathers of children ages 40days to 4months 26 health providers, 20 local community health workers, 37 traditional birth attendants, 42 community and religious leaders, 11 health office staff Sample Size: 295 respondents	Purposive sampling	Use of postpartum care within 42 days after delivery
Ugboaja et al. (2013)	Nigeria	Cross-sectional survey Market setting (4 markets) Semi-structured questionnaires and 8 focus group discussion	Market women who had a live birth in the past 3 years Age: 20 and above Sample size: 398 women interviewed (out of 400 selected) 10-15 participants for focus groups	Equal numbers of women (100) selected from each of 4 markets	Attendance at postnatal care clinics
Yamashita et al. (2014)	Philippines	Cross-sectional survey Philippie General Hospital and a Postpartum health education seminar Self-report questionnaire	Women from 3 hours to 6 weeks postpartum. Age: 16 -45 years Sample size: 64 (out of 77)	Two stage stratified random sampling	Use of postpartum care services

2.2.7 Synthesis

Based on the three delays model for guiding the synthesis of results, factors affecting the use of postpartum care were categorized into: 1) Phase I Delays – delays in decision to seek care; 2) Phase II Delays – delays in reaching a health facility; and 3) Phase III Delays – delays in receiving care at a health facility. Synthesis was done by tabulating study characteristics and results, identifying themes, and grouping themes under the phases of delay. Statistically significant factors affecting postpartum care use were grouped and reported under the three phases of delay.

2.3 Results

2.3.1 Study Characteristics

Out of the 13 studies that were included, eight were quantitative, three were qualitative, and two used mixed methods (see Table 2.3). All were primary studies (original research conducted by the authors) and employed cross-sectional designs. All studies were published within the past 10 years: three in 2015, two in 2014, four in 2013, and one each in 2011, 2010, 2007, and 2006. Two studies were conducted in Nigeria, two in Uganda, and one each in the Philippines, Jordan, Pakistan, Nepal, Cameroon, South Africa, Egypt, Indonesia, and Bangladesh (Table 2.3).

2.3.2 Sample Characteristics

A total of 2,443 postpartum women were included in the studies, with a range of 24 to 398 postpartum women. In addition, there were a total of 56 healthcare providers, and 226 other respondents or key informants (community, political, and religious leaders, fathers, community members, traditional health attendants, etc.). The ages of the women ranged from 15 to 49 years. Postpartum women interviewed were as early as 3 hours postpartum to 5 years postpartum (Table 2.3).

2.3.3 Qualitative/Descriptive Analyses

Phase I Delays: Factors affecting women's decision to use postpartum care services included: view that postpartum care is not needed/not necessary (Islam & Odland, 2011; Metwally et al., 2013; Nkwabong et al., 2015; Susuman, 2015; Titaley et al., 2010; Ugboaja et al., 2013), no support/encouragement from family or husbands (Abushaikha & Khalaf, 2014; Islam & Odland, 2011; Metwally et al., 2013; Nkwabong et al., 2015; Yamashita et al., 2014), economic reasons such perceived cost of services (Islam & Odland, 2011; Titaley et al., 2010; Ugboaja et al., 2013; Yamashita et al., 2014), lack of awareness/knowledge of postpartum care services (Islam & Odland, 2011; Nabukera et al., 2006; Ugboaja et al., 2013), cultural/religious barriers such as use of herbs, mothers never went for care (Islam & Odland, 2011; Metwally et al., 2013; Nabukera et al., 2006; Susuman, 2015; Ugboaja et al., 2013), lack of time (Nkwabong et al., 2015) and pre-existing perceptions of postpartum care such as perception that postpartum care is only to immunize babies (Nabukera et al., 2006).

Phase II Delays: Factors affecting the use of postpartum care services under Phase II Delays included accessibility issues such as physical proximity to health services/distance to facility, and limited availability of health services (Islam & Odland, 2011; Metwally et al., 2013; Susuman, 2015; Titaley et al., 2010; Ugboaja et al., 2013; Yamashita et al., 2014). Participants in studies also reported lack of money for transport or transportation problems (Islam & Odland, 2011; Nabukera et al., 2006; Nkwabong et al., 2015; Titaley et al., 2010), and women's poor physical condition (Yamashita et al., 2014) as reasons for not seeking postpartum care services. ***Phase III Delays:*** Phase III Delay factors included issues related to quality of services or facility related barriers such as negative attitude of staff, lack of drugs, lack of equipment and skills of providers (Islam & Odland, 2011; Metwally et al., 2013; Nabukera et al., 2006).

2.3.4 Quantitative Analyses (Bivariate)

Phase I Delays: Several factors affecting the use of postpartum care were categorized as Phase I Delays. These factors affecting the decision to seek postpartum care included: exposure to mass media, pregnancy complications, women's education, husband's education, women's occupation, husband's occupation, household income, increasing number of children, negative provider attitudes, lack of women's autonomy or husband's refusal, and lack of awareness about postpartum care (see Table 2.4).

Exposure to mass media: Women, who were exposed to mass media, had a 2.24 ($p=0.025$) times greater odds of using postpartum care than women who were not exposed to mass media (Ejaz & Ahmad, 2013). In another study, 53% of women who had some exposure to mass media used postpartum care compared to 4% ($p<0.001$) of women who had no exposure to any mass media (Islam & Odland, 2011).

Pregnancy/delivery/postpartum complications: Having no previous complications was a significant reason (95% CI 50.4-70.4) for not seeking postpartum care (Idris et al., 2013). In one study, 97% of women who had no complications after delivery did not attend postpartum care visits compared to 4% ($p<0.001$) of women who had complications after delivery (Nkwabong et al., 2015). Also, the odds of using postpartum care was 5.49 (95% CI 1.63-18.53) times greater among women who had a health problem after delivery than among women who did not have any health problems after delivery (Dhakal et al., 2007). Further, women who were aware of pregnancy complications, had 2.49 ($p=0.031$) times greater odds of using postpartum care than women who were not aware of pregnancy complications (Ejaz& Ahmad, 2013). The odds of using postpartum care within 2-7 days after delivery was 3 ($p<0.001$) times greater in women who were educated on postpartum complications than women who were not (Izudi & Amongin, 2015).

Women's education: Literate women had 3.45 (p=0.003) times greater odds of using postpartum care than illiterate women (Ejaz& Ahmad, 2013). In one study, 54% of women with some education attended postpartum care compared to 5% (p<0.001) of women with no education (Islam & Odland, 2011). Women with secondary school education had 6.49 (95% CI 2.50-17.2) times greater odds of using postpartum care than women who were illiterate (Dhakal et al., 2007). Use of postpartum care increased (p=0.04) with increasing levels of women's education (Ugboaja et al., 2013).

Husband's education: Wives of literate men had 2.53 (p=0.011) times greater odds of using postpartum care than wives of illiterate men (Ejaz& Ahmad, 2013). Wives of men educated up to secondary school level had 6.33 (95% CI 1.55-29.95) times greater odds of using postpartum care than wives of illiterate men (Dhakal et al., 2007). Postpartum care use was higher among women whose husbands attended some school (39%) compared to 4% (p<0.001) of women whose husbands did not attend any school (Islam & Odland, 2011).

Women's occupation: The odds of using postpartum care was 7.25 (95% CI 2.94-18.18) times higher among housewives than women whose main occupation was farming (Dhakal et al., 2007). In another study, 80% of service workers used postpartum care compared to 5% (p=0.001) of women in agriculture and housewives (Islam & Odland, 2011). Also, women who were self-employed had lower odds (OR 0.19, p=0.006) of using postpartum care than women who were unemployed (Izudi & Amongin, 2015).

Husband's occupation: Postpartum care use was higher among women whose husbands were involved in other occupations (53%) compared to four percent of women whose husbands were involved in agricultural work (Islam & Odland, 2011). The odds of using postpartum care was 3.23 (95% CI 1.43-7.23) times greater among wives of men in other jobs than wives of farmers (Dhakal et al., 2007). Also, wives of men in government

jobs had 5.09 (p=0.004) times greater odds of using postpartum care than wives of men in other jobs (Ejaz & Ahmad, 2013).

Household income: The odds of using postpartum care increased with increasing household income (Ejaz& Ahmad, 2013). Women with a monthly household income of 7001-10000 rupees had 3.33 (p=0.003) times greater odds, and >10000 rupees had 3.7 (p=0.009) times greater odds of using postpartum care than women with a monthly household income of less than or equal to 5000 rupees (Ejaz& Ahmad, 2013). However, in another study, women who had a monthly household income greater than 75000 Ugandan shillings had lower odds of using postpartum care than women who had a monthly household income of 75000 or less (Izudi & Amongin, 2015).

Negative provider attitudes was significantly (95% CI 19.4-38.0) associated with postpartum care use (Idris et al., 2013). Health worker rudeness lowered the odds (OR 0.42, p=0.017) of women using postpartum care compared to health worker friendliness (Izudi & Amongin, 2015). ***Increasing number of children*** was also associated with less use of postpartum care; women with three or more children had lower odds (OR 0.16, 95% CI 0.04-0.51) of using postpartum care than women with one to two children (Dhakal et al., 2007). ***Lack of women's autonomy/husband's refusal*** (95% CI 1.9-12.2) and ***lack of awareness of existence of postpartum care*** (95% CI 2.5-13.5) were also reasons why women did not use postpartum care (Idris et al., 2013).

Phase II Delays: Perceived easy access to a health facility was associated with less use of postpartum care (Izudi & Amongin, 2015). Women who said they found it easy to access a health facility had lower odds (OR 0.51, p=0.027) of using postpartum care than women who said they found it difficult to access a health facility (Izudi & Amongin, 2015).

Phase III Delays: Category of health facility (hospital or health center), type of health facility (public or private), and queuing at the health facility were phase III delay factors

(Izudi & Amongin, 2015). The odds of using postpartum care in hospitals was less (OR 0.30, p=0.005) than in health centers (Izudi & Amongin, 2015). Also, the odds of using postpartum care in a public health facility was less (OR 0.04, p<0.001) than private health facilities (Izudi & Amongin, 2015). Further, long queuing at health facilities lowered the odds of postpartum care use (OR 0.43, p=0.039) than short queuing at health facilities (Izudi & Amongin, 2015).

2.3.5 Other Factors

Place/location of delivery: Only 20% of women who delivered at home attended postpartum care visits compared to 65% and 75% of women who delivered at a health center or hospital respectively (Yamashita et al., 2014). The odds of using postpartum care was 11.07 (p=0.000) times greater among women who delivered at a hospital than women who delivered at home (Ejaz& Ahmad, 2013). The odds of using postpartum care was10.5 (95% CI 4.64-23.71.) times greater among women who delivered in a hospital than women who delivered at home (Dhakal et al., 2007).

Antenatal care attendance: Ninety-three percent of women who attended antenatal care used postpartum care compared to 36% (p<0.01) of women who did not attend antenatal care (Ugboaja et al., 2013). The odds of using postpartum care was 3.56 (p=0.049) times greater among women who attended antenatal care than women who did not attend antenatal care (Ejaz& Ahmad, 2013). In another study, women who attended antenatal care had 24 .6 (95% CI 3.39-500.9) times more odds of using postpartum care than those who did not attend antenatal care (Dhakal et al., 2007).

Type of delivery: Women, who had minor or major surgery during delivery, used more postpartum care than those who had vaginal delivery. Specifically, these women had 22.67 (p=0.000) times greater odds of using postpartum care than women with vaginal deliveries (Ejaz& Ahmad, 2013). About 97% of women who delivered vaginally did not

attend postpartum visits compared to 4% (p<0.001) of women who delivered via cesarean section (Nkwabong et al., 2015).

Postpartum care visit scheduled: Sixty-seven percent of women who had no postpartum care visit scheduled did not attend postpartum care compared to 33% (p<0.001) of women who had a visit scheduled (Nkwabong et al., 2015). The odds of using postpartum care within two to seven days after delivery was 2.42 (p=0.042) times greater among women who were informed of postpartum care schedules than women who were not informed (Izudi & Amongin, 2015).

Table 2.4. *Significant Determinants of Postpartum Care Use from Bivariate Analyses*

Phase I Delays	**Significant Determinants of Postpartum Care Use**	**Number of Studies**	**References**
Delays in deciding to seek care on the part of the individual, the family, or both	Lack of women's autonomy or husband's refusal (less use of postpartum care)	1	Idris et al. (2013)
	Exposure to mass media (more use of postpartum care)	2	Ejaz& Ahmad (2013) Islam & Odland (2011)
	Awareness about pregnancy complications or husband concerned about pregnancy complications or woman had complications after delivery (more use of postpartum care)	5	Ejaz& Ahmad (2013) Idris et al. (2013) Dhakal et al. (2007) Izudi & Amongin (2015) Nkwabong et al. (2015)
	Lack of awareness about postpartum care (less use of postpartum care)	1	Idris et al. (2013)
	Negative provider attitudes (less use of postpartum care)	2	Idris et al. (2013) Izudi & Amongin (2015)
	Increasing level of women's education (more use of postpartum care)	4	Ejaz& Ahmad (2013) Dhakal et al. (2007) Ugboaja et al. (2013) Islam & Odland (2011)
	Increasing level of husband's education (more use of postpartum care)	3	Ejaz& Ahmad (2013) Dhakal et al. (2007) Islam & Odland (2011)
	Women's occupation – farmers, unemployed (less use of postpartum care)	3	Dhakal et al. (2007) Islam & Odland (2011) Izudi & Amongin (2015)

Table 2.4 (cont'd)

	Husband's occupation – farmers, agriculture (less use of postpartum care)	3	Ejaz& Ahmad (2013) Dhakal et al. (2007) Islam & Odland (2011)
	Household income – richest and richer wealth quintiles (more use of postpartum care)	2	Ejaz& Ahmad (2013) Izudi & Amongin (2015)
	Increasing number of children/household size (less use of postpartum care)	1	Dhakal et al. (2007)
Phase II Delays	**Significant Determinants of Postpartum Care Use**	**Number of Studies**	**References**
Delays in reaching a health care facility	Perceived easy access to health facility - (less use of postpartum care)	1	Izudi & Amongin (2015)
Phase III Delays	**Significant Determinants of Postpartum Care Use**	**Number of Studies**	**References**
Delays in receiving care at the facility	Queuing at health facility (less use of postpartum care)	1	Izudi & Amongin (2015)
	Type of health facility – public facilities (less use of postpartum care)	1	Izudi & Amongin (2015)
	Category of health facility – health centers (more use of postpartum care)	1	Izudi & Amongin (2015)
Other Factors	**Significant Determinants of Postpartum Care Use**	**Number of Studies**	**References**
	Place/location of delivery – delivery at health facility (more use of postpartum care)	3	Yamashita et al. (2014) Ejaz& Ahmad (2013) Dhakal et al. (2007)
	Postpartum care visit scheduled (more use of postpartum care)	2	Izudi & Amongin (2015) Nkwabong et al. (2015)
	Antenatal care attendance (more use of postpartum care)	3	Ejaz& Ahmad (2013) Dhakal et al. (2007) Ugboaja et al. (2013)
	Type of delivery –normal delivery (less use of postpartum care)	2	Ejaz& Ahmad (2013) Nkwabong et al. (2015)

2.3.6 Quantitative Analyses (Multivariate)

Two studies conducted multivariate analysis in addition to bivariate analysis (Dhakal et al., 2007; Izudi & Amongin, 2015). Antenatal care attendance (OR 11.06, 95% CI 1.16-105.59), delivery at a hospital (OR 10.12, 95% CI 3.40-30.07), having a health problem after delivery (OR 17.3, 95% CI 3.36-88.78), and being a housewife (OR 6.28, 95% CI 2.00-19.69) remained significant predictors of postpartum care use controlling for ethnicity, women's education, husbands' education, women's occupation, husbands' occupation, number of children, and age at first pregnancy (Dhakal et al., 2007). In the other study, being informed of a postpartum visit schedule (aOR 9.73, p=0.014), formal employment of women (Aor 3.88, p=0.038), and delivery at a public health facility (aOR 0.03, p<0.001) remained significant in multivariate analysis after controlling for category of health facility, monthly household income, educated on postpartum complications, health worker behavior, queuing at health facility, and access to nearby health facility (Izudi & Amongin, 2015).

2.4 Discussion

This integrative review sought to identify factors that affect the use of postpartum care in developing countries. The results of the study were summarized according to the three delays framework (Thaddeus & Maine, 1994). From bivariate analyses, the top five significant factors affecting postpartum care use were 1) awareness about complications or concerned about complications; 2) women's education; 3) women's occupation; 4) husband's education; and 5) husband's occupation. A study in Bangladesh that analyzed Demographic and Health Survey (DHS) data also found that husbands' concern about complications was an independent predictor of seeking postpartum care in multivariate analysis, controlling for age, education, parity, wanted last child, religion, antenatal care, place of delivery, wealth index, occupation, mass media exposure, distance, and permission to go to the health center alone (Rahman, Hague, & Zahan, 2011). Therefore, interventions aimed at decreasing phase 1

delays should educate women and their husbands about warning signs of postpartum complications and when to seek care. Families should also be educated on the importance of returning for postpartum visits even if the woman did not have any complications during delivery as life-threatening complications that can occur during the postpartum period are often unpredictable and may require rapid action (WHO & UNICEF, 2010).

Since education and occupation were the main significant socioeconomic factors affecting postpartum care use, interventions on postpartum care should target illiterate families, families with primary school education, men and women with farming as main occupation, and wives of farmers. Similar to our findings on socioeconomic determinants, a systematic review on inequities in postnatal care in low and middle-income countries indicated that the odds of using postnatal care increased with increasing socioeconomic status (Langlois et al., 2015). Compared to women with no formal education, women who had primary school education were more likely to use postnatal care, and women who had secondary school education were most likely to use postnatal care (Langlois et al., 2015). Likewise, women whose husbands were educated up to secondary school level used more postnatal care. The study also found that wives of men with well paid jobs were more likely to use postnatal care than wives of farmers (Langlois et al., 2015). These results reiterate the importance of targeting postpartum care interventions to uneducated families and farming communities.

From descriptive and thematic analysis, the top three factors affecting decisions to seek postpartum care mentioned by participants, ranked by the number of studies mentioning these factors, were the view that postpartum care is not necessary or needed, lack of support or encouragement from husbands or family members, and economic reasons. These perceived barriers to postpartum care use should not be ignored. Community-based, health education interventions are critical to addressing some of these barriers, especially the need for

postpartum care and husband/family support. Communities should be sensitized on the importance of going for postpartum care visits, even when the woman feels fine, and encourage support from husbands and family members in seeking postpartum care services.

Many studies in this integrative review that employed statistical analyses (bivariate and multivariate) to identify determinants of seeking postpartum care, examined socioeconomic and demographic factors such as education, occupation, household income, and household size. Besides these factors, it is important to establish whether perceived barriers frequently mentioned by participants, such as view that postpartum care is not necessary, lack of support, lack of awareness, and cultural barriers, are significant determinants of deciding to seek postpartum care (Phase I delays). Further research is also recommended to determine whether frequently cited phase II delay reasons by participants such as distance, transportation, women's poor physical condition, and limited availability of services, are significant determinants of reaching a health facility for postpartum care. Likewise, more studies are needed to determine if phase III delay factors such as negative staff attitudes, lack of drugs and equipment, lack of skills of providers, among others, are significant delays in receiving adequate postpartum care in health facilities.

In addition, interventions targeting specific factors such as distance and transportation barriers, which have been identified in multiple studies, are critical to discovering what interventions would be effective in reducing phase II delays of seeking postpartum care in health facilities. The establishment of waiting homes for postpartum care could be explored to make arrangements for women to stay nearer the facility for at least 48 hours after delivery, or until their one-week postpartum checkup. Studies are also needed to explore what health facility or staff interventions may be effective in reducing phase III delays. Such studies could explore training of midwives on postpartum care, midwife incentives, and implementation of postpartum care assessment checklists.

This integrative review contributes to the literature by synthesizing factors affecting the use of postpartum care in developing countries from primary research studies, according to the three delays that can lead to a mother's death. However, studies in this review were conducted in developing countries with different contexts, and used different study designs, thus, generalizability across countries and different contexts is limited. Second, although the outcome across all studies was the use of postpartum care, timing of such use varied across studies from 48 hours after delivery to 2 months after delivery. Only two of the included quantitative studies performed multivariate analyses, in addition to bivariate analyses, to identify independent predictors of postpartum care use. Thus, significant determinants of postpartum care use reported in this review are mostly from bivariate associations. Multivariate analyses are recommended in future primary studies that seek to examine factors affecting use of postpartum care services, because such analysis would identify independent predictors of postpartum care use.

2.5 Conclusions

The results of this integrative review identified several significant determinants of postpartum care use. The results indicated that pregnancy/delivery/postpartum complications, education and occupation of women and their husbands, are the most frequently examined determinants of postpartum care use, based on the number of studies that examined these factors. Many studies examined factors that fell under phase I delays. Further research is recommended to establish significant delays in reaching health facilities (phase II delays) and in receiving adequate care in health facilities (phase III delays) once the mother arrives at the facility. From the results, interventions aimed at decreasing phase 1 delays should include husbands and family members, and should educate women and their husbands about the importance of postpartum care, warning signs of postpartum complications and when to seek care. There is also a critical need for interventions that focus on illiterate men and women,

women in agriculture, farmers and wives of farmers, because these populations had lower levels of postpartum care utilization. In addition, interventions are needed to decrease phase II delays of distance and transportation barriers, and explore what health facility or staff interventions may be effective in reducing phase III delays.

REFERENCES

REFERENCES

Abushaikha, L., &Khalaf, I. (2014). Exploring the roles of family members in women's decision to use postpartum healthcare services from the perspectives of women and health care providers. *Women & Health,* 54(6), 502-512.

Bazile, J., Rigodon, J., Berman, L., Boulanger, V.M., Maistrellis, E., Kausiwa, P., & Yamin, A. (2015). Intergenerational impacts of maternal mortality: Qualitative findings from rural Malawi. *Reproductive Health,* 12 (1). doi: 10.1186/1742-4755-12-S1-S1

Chen, L., Qiong, W., van Velthoven, M.H., YanFeng, Z., ShuYi, Z., Ye, L., . . . Ting, Z. (2014). Coverage, quality of and barriers to postnatal care in rural hebei, china: A mixed method study. *BMC Pregnancy and Childbirth, 14*(31). doi:10.1186/1471-2393-14-31

Dhakal, S., Chapman, G.N., Simkhada, P.P., Teijlingen, E.R.v., Stephens, J., & Raja, A.E. (2007). Utilization of postnatal care among rural women in Nepal. *BMC Pregnancy and Childbirth, 7*(19), doi**:** 10.1186/1471-2393-7-19

Ejaz, S., & Ahmad, K. (2013). Postpartum care utilization among primigravida: A study in rural punjab, pakistan. *Research on Humanities and Social Sciences*, 3(4), 10-19.

Fowkes, F. G., & Fulton, P. M. (1991). Critical appraisal of published research: introductory guidelines. *British Medical Journal, 302*(6785), 1136-1140.

Idris, S.H., Sambo, M.N., & Ibrahim, M.S. (2013). Barriers to utilization of maternal health services in a semi-urban community in northern Nigeria: The clients' perspective. *Nigerian Medical Journal,* 54(1), 27-32.

Islam, M. (2007). The safe motherhood initiative and beyond *Bulletin of the World Health Organization*, 85(10). doi: 10.2471/BLT.07.045963

Islam, M.R., & Odland, J.O. (2011). Determinants of antenatal and postnatal care visits among indigenous people in bangladesh: A study of the Mru community. *Rural and Remote Health,* 11(2), 1672-1672.

Izudi, J., & Amongin, D. (2015). Use of early postnatal care among postpartum women in Eastern Uganda. *International Journal of Gynecology & Obstetrics*, 129(2), 161-164.

Kes, A., Ogwang, S., Pande, R., Douglas, Z., Karuga, R., Odhiambo, F.O., . . . Schaffer, K. (2015). The economic burden of maternal mortality on households: Evidence from three sub-counties in rural western Kenya. *Reproductive Health*, 12 (1), S3. doi: 10.1186/1742-4755-12-S1-S3

Langlois, É. V., Miszkurka, M., Zunzunegui, M. V., Ghaffar, A., Ziegler, D., & Karp, I. (2015). Inequities in postnatal care in low-and middle-income countries: a systematic review and meta-analysis. *Bulletin of the World Health Organization*, *93*(4), 259-270G.

Malawi National Statistical Office, & ICF Macro. (2011). *2010 Malawi demographic and health survey: Key findings*, Calverton, Maryland, USA: NSO and ICF Macro.

Metwally, A.M., Abdel-Latif, G.A., Salama, S.I., Tawfik, A., Elmosalami, D.M., & Mohsen, A.M.A. (2013). Care seeking behaviors of rural women in Egypt: Community based study. *Journal of Applied Sciences Research,* 9(6), 3767-3780.

Miller, S., & Belizan, J.M. (2015). The true cost of maternal death: Individual tragedy impacts family, community and nations. *Reproductive Health,* 12(1), 56. doi: 10.1186/s12978-015-0046-3

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*, 151(4), 264-269.

Molla, M., Mitiku, I., Worku, A., & Yamin, A. (2015). Impacts of maternal mortality on living children and families: A qualitative study from Butajira, Ethiopia. *Reproductive Health,* 12(1), S6. doi: 10.1186/1742-4755-12-S1-S6

Moucheraud, C., Worku, A., Molla, M., Finlay, J.E., Leaning, J., & Yamin, A. (2015). Consequences of maternal mortality on infant and child survival: A 25-year longitudinal analysis in Butajira Ethiopia (1987-2011). *Reproductive Health,* 12(1), S4. doi: 10.1186/1742-4755-12-S1-S4

Mrisho, M., Obrist, B., Schellenberg, J.A., Haws, R.A., Mushi, A.K., Mshinda, H., . . .Schellenberg, D. (2009). The use of antenatal and postnatal care: Perspectives and experiences of women and health care providers in rural southern Tanzania. *BMC Pregnancy and Childbirth,* 9(10). doi: 10.1186/1471-2393-9-10

Nabukera, S.K., Witte, K., Muchunguzi, C., Bajunirwe, F., Batwala, V.K., Mulogo, E.M., . . . Salihu, H.M. (2006). Use of postpartum health services in rural Uganda: Knowledge, attitudes and barriers. *Journal of Community Health,* 31(2), 84-93.

Nkwabong, E., Ilue, E. E., & Bisong, C. E. (2015). Factors associated with poor attendance at the postpartum clinic six weeks after delivery in Cameroon. *International Journal of Gynecology & Obstetrics*, 129(3), 248-250.

Piane, G.M. (2008). Evidence-based practices to reduce maternal mortality: A systematic review *Journal of Public Health,* 31(1), 26-31.

Sullivan, T.R., &Hirst, J.E. (2011). Reducing maternal mortality: A review of progress and evidence-based strategies to achieve millennium development goal 5. *Health Care for Women International,* 32(10), 901-916. doi: 10.1080/07399332.2011.603867

Susuman, A. S. (2015). Health care services and maternal education in South Africa. *Scandinavian journal of public health*, doi: 10.1177/1403494815596501

Tarekegn, S.M., Lieberman, L.S., &Vincentas, G. (2014). Determinants of maternal health service utilization in Ethiopia: Analysis of the 2011 Ethiopian demographic and

health survey. *BMC Pregnancy and Childbirth, 14*(161). doi: 10.1186/1471-2393-14-161

Thaddeus, S., & Maine, D. (1994). Too far to walk: Maternal mortality in context. *Social Science Medicine,* 38(8), 1091-1110.

Titaley, C.R., Hunter, C.L., Heywood, P., &Dibley, M.J. (2010). Why don't some women attend antenatal and postnatal care services?: A qualitative study of community members' perspectives in Garut, Sukabumi and Ciamis districts of West Java province, Indonesia. *BMC Pregnancy and Childbirth, 10*(61). doi: 10.1186/1471-2393-10-61

Ugboaja, J.O., Berthrand, N.O., Igwegbe, A.O., & Obi-Nwosu, A.L. (2013). Barriers to postnatal care and exclusive breastfeeding among urban women in southeastern Nigeria. *Nigerian Medical Journal,* 54(1), 45-50.

Wang, W., Alva, S., Wang, S., & Fort, A. (2011). Levels and trends in the use of maternal health services in developing countries. DHS Comparative Reports No. 26. Calverton, Maryland, USA: ICF Macro

WHO. (2015). *Maternal mortality*. Retrieved from http://www.who.int/mediacentre/factsheets/fs348/en/

WHO. (2010). *WHO technical consultation on postpartum and postnatal care*. Geneva, Switzerland: Retrieved from http://whqlibdoc.who.int/hq/2010/WHO_MPS_10.03_eng.pdf.

WHO & UNICEF. (2010). *Countdown to 2015 decade report (2000–2010): Taking stock of maternal, newborn and child survival.* Washington, DC: Author

Yamashita, T., Suplido, S.A., Ladines-Llave, C., Tanaka, Y., Senba, N., & Matsuo, H. (2014). A cross-sectional analytic study of postpartum health care service utilization in the Philippines. *PLoS ONE,* 9(1), e85627-e85627.

CHAPTER 3

USE AND EVALUATION OF POSTPARTUM CARE SERVICES IN RURAL MALAWI

This manuscript is published and available online. The citation is listed below:

Adams, Y.J., Stommel, M., Ayoola, A.B., Horodynski, M., Malata, A., & Smith, B.A. (2016). Use and evaluation of postpartum care services in rural Malawi. *Journal of Nursing Scholarship,* doi: 10.1111/jnu.12257

Abstract

Purpose: The purpose of this study was to examine women's evaluation of postpartum care services (postpartum clinical assessments, health education, and midwife kindness) received from midwives prior to discharge in rural health facilities, and to examine husband-and-wife farmer dyads' reasons for their decisions to return or not return for one-week postpartum care visits in rural central Malawi.

Design: Cross-sectional matched-pairs survey design

Methods: Participants included a convenience sample of 70 husband-and-wife farmer dyads living in rural communities, who had a live birth in the past year at one of four health facilities in Ntcheu district, central Malawi. Data were collected using an interviewer-administered postpartum care questionnaire from the WHO Safe Motherhood Needs Assessment Questionnaires. Data analysis included univariate statistics.

Findings: Women's evaluation of postpartum care assessments received from midwives in rural health facilities prior to discharge included partial assessments of blood pressure (44%); temperature (41%); abdominal exam (50%); vaginal exam/bleeding (46%); breast exam/soreness (34%); and baby exam (77%). Only 16% of the women received all six postpartum clinical assessments mentioned above prior to discharge, while 11% received

none. Women also reported that midwives did not: introduce themselves (50%); ask if patients had questions (44%); explain what they were doing (43%) or explain what to expect after delivery (50%). Despite this, 77% of women felt midwives paid close attention to them and 83% gave an overall positive evaluation (3.5-5 on a scale of 1-5). Numbers of postpartum clinical assessments (p=0.09) and overall evaluation did not differ between the four health facilities (p=0.71). Top three reasons for husbands and wives' decisions to return for one-week postpartum care visits were: being advised to return for care, wanted the mother to be examined, and wanted the baby to be examined. Participants stated not perceiving a need for care (feels fine), not advised to return for care, and prior negative experiences may potentially prevent them from returning for postpartum care visits in a health facility.

Conclusions: Most women reported receiving only partial postpartum clinical assessments; thus, it is important for health facilities to address the adequacy of postpartum clinical assessments provided to women by midwives before discharge. Women returned for one-week postpartum care visits, because they were advised to return for care, and also to make sure their babies were examined. However, the principal reason why husbands permitted their wives to return for postpartum care was because they wanted their wives to be examined.

Keywords: Postpartum care, decision to return for care, postpartum evaluation, adequacy of care, postpartum clinical assessments, Malawi

Clinical Relevance

Midwives need to advise all patients to return for postpartum care visits consistent with WHO or country guidelines, and continue to educate husbands and wives regarding the importance of postpartum care even when the wife feels fine. Refresher in-service trainings

on postpartum care are recommended for midwives to encourage them to perform the recommended postpartum clinical assessments.

3.1 Introduction

Sub-Saharan African countries have the world's highest rates of maternal deaths. Sub-Saharan Africa alone accounted for 62% of all maternal deaths globally in 2013 (WHO & UNICEF, 2014). Malawi, a small country in Southeastern Africa, is among the top 16 countries in Sub-Saharan Africa with the highest maternal mortality ratios, where an estimated 675 mothers die per 100,000 live births (WHO & UNICEF, 2014). This is more than 50 times the maternal mortality ratio in developed countries, which is 12 maternal deaths per 100,000 live births (WHO, 2015).

The postpartum period, defined as the time from one hour after delivery of the placenta to six weeks (42 days) after delivery of the baby, poses substantial risks and can result in significant maternal morbidity and mortality; yet, it receives much less attention from health care providers in developing countries than pregnancy and childbirth (WHO, 2010). Analysis of causes and characteristics of maternal deaths in health facilities in the central region of Malawi indicate that about 70% of maternal deaths occurred in the postpartum period; and 90% of the postpartum deaths occurred in the first seven days after delivery (Kongnyuy, Mlava, & van den Broek, 2009). Postpartum hemorrhage (25.6%) and postpartum sepsis (16.3%) were the two major causes of direct maternal deaths (Kongnyuy et al., 2009).

Postpartum care is important for maternal health and survival, because life-threatening complications that occur after delivery are often unpredictable and require rapid response (WHO & UNICEF, 2010). Postpartum hemorrhage for example, if not managed promptly, can result in death of the mother in just a few hours (WHO & UNICEF, 2010). Postpartum care enables healthcare providers to prevent potential postpartum problems, and identify and treat postpartum complications promptly (Titaley, Hunter, Heywood, & Dibley, 2010). In addition, providers can offer help and support for a wide range of related health and

social needs during postpartum visits, and can also encourage mothers to adopt evidenced-based postpartum practices at home, since maternal self-care usually takes place at home (WHO, 2010).

The World Health Organization (WHO) recommends that postpartum care be provided to mothers for at least 24 hours after birth in a health facility. The mother should then be examined at 48-72 hours, 7-14 days, and six weeks after birth (WHO, 2013). The WHO recommends postpartum clinical assessments of the mother include measurement of vital signs and assessment of vaginal bleeding, uterine contraction, fundal height, urine void and breast tenderness/pain (WHO, 2013). However, not all women, who deliver in health facilities in developing countries, receive postpartum clinical assessments at the recommended time points (Wang, Alva, Wang, & Fort, 2011). In addition, not all women, who have been seen by a healthcare provider during the immediate postpartum period in developing countries, receive the recommended range of postpartum clinical assessments (WHO & UNICEF, 2010). In Malawi, nurses/midwives are the main primary healthcare providers, especially in rural areas, providing the bulk of maternity care services to women (Bradley et al., 2015). A review of postpartum care in health facilities, conducted in a district in central Malawi, indicated that 63% of midwives in government facilities discharged postpartum women without checking their vital signs (Chimtembo, Maluwa, Chimwaza, Chirwa, & Pindani, 2013).

The Ministry of Health in Malawi recommends that all women, who deliver in a health facility, should receive postpartum care within the first 24 hours after delivery (Malawi Ministry of Health, 2007). If delivery occurred outside of a health facility, a woman should be referred to a health facility for postpartum care within 12 hours (Malawi Ministry of Health, 2007). However, findings from a nationally representative survey in Malawi indicated 48% of all women did not receive any postpartum care after delivery, and only 32% received

postpartum care within 23 hours or less (Malawi National Statistical Office & ICF Macro, 2011). Urban women were more likely than rural women to receive postpartum care within the first two days after delivery. Nationally, 50% of rural women in Malawi did not receive any postpartum care after delivery (Malawi National Statistics Office, 2011).

Many women who give birth in health facilities in developing countries are discharged within hours after delivery (WHO, 2010). Thus, it is essential that women return to health facilities for their recommended postpartum care visits after discharge. Studies have shown that rural women with farming as a main occupation or wives of farmers have significantly lower rates of postpartum care use (Dhakal et al., 2007; Khanal, Adhikari, Karkee, & Gavidia, 2014; Rahman, Haque, & Zahan, 2011). Identifying reasons why rural women decide or do not decide to return for postpartum care visits is an important step in designing interventions that can decrease postpartum mortality rates. It is also important to understand the reasons why husbands may or may not permit their wives to return for postpartum care visits, because in many settings in Sub-Saharan Africa, husbands, as household heads, are the decision makers (Mullany, Becker, & Hindin, 2007). Thus, the ability of women to seek health care is often determined by their husbands (Mullany et al., 2007).

The first objective of this study was to examine women's evaluation of postpartum care services (postpartum clinical assessments, health education, and midwife kindness) received from midwives prior to discharge in rural health facilities in central Malawi. To address the first objective, we posed the following specific research questions: 1) what routine postpartum clinical assessments and health education did women receive in health facilities prior to discharge? 2) Does the average number of postpartum clinical assessments and health education received by women differ between health facilities? 3) What are women's perceptions of midwife kindness and overall evaluation of care received prior to

discharge? The second objective was to examine husband-and-wife farmer dyads' reasons for their decisions to return or not return to a health facility for one-week postpartum care visits in rural central Malawi. This study is one of a few postpartum care studies to evaluate WHO recommended postpartum clinical assessments provided to women in health facilities prior to discharge in Malawi. It is also one of few studies that explore the reasons behind husbands' decisions regarding their wives' postpartum care. Findings could be used to aid in the design of targeted postpartum care interventions for husband-and-wife dyads in rural Malawi.

3.1.1 Conceptual Framework

This study is guided by the three delays model (Thaddeus & Maine, 1994). The model is based on the premise that delays in accessing obstetric care have three phases which prevent women from receiving care, and become factors that contribute to maternal deaths (Win, Vapattanawong, & Vong-ek, 2015). The three phases of delays are: 1) delay in deciding to seek care on the part of the individual, the family, or both; 2) delay in reaching a health care facility; and 3) delay in receiving adequate care at the health facility (Thaddeus & Maine, 1994). This study focuses on the first and third delays as they relate to postpartum care among rural husband-and-wife farmer dyads in Malawi.

3.2 Methods

3.2.1 Design, Setting and Sample

A descriptive, cross-sectional matched-pairs survey design was adopted. Participants comprised a convenience sample of 70 husband-and-wife dyads, who were 18 years of age or older, able to communicate in Chichewa, and had a live birth in the past year. Women were included only if they had a spouse available to participate with them. All participants were subsistence farmers living in rural communities in two Extension Planning Areas (EPAs) in the Ntcheu district of central Malawi. The farmers were part of the MSU Africa RISING

project, an established program of research in Malawi working with rural farmers on agro-ecological intensification. There were a total of four health facilities where the women delivered and received postpartum care prior to discharge. These health facilities included two government health centers, one faith based health center, and one district hospital. All of the health centers had only one midwife on duty at a scheduled time period, who was responsible for all maternity care services, and the postpartum ward at the district hospital had 4 midwifes on duty. Six out of the seven midwives were all Nurse Midwife Technicians, trained through a 3-year diploma program, and one was a community health nurse, trained through a 1-year certificate program.

The first author worked with Extension Officers in each of the EPAs to identify households that had a baby less than one-year-old. Extension officers in Malawi are trained personnel under the Ministry of Agriculture, whose responsibilities are to educate and provide advisory services to farmers on a wide range of issues, among which are farming practices, harvesting, disease and pest control, and new technologies. Extension officers work within operational jurisdictional locales called Extension Planning Areas (EPAs) that typically encompass a cluster of villages. The research team, comprised of the first author, extension officer, and two interviewers, visited each household and conducted interviews in their homes. All participants were offered consent in their native language, Chichewa, and were asked to provide consent by providing their thumb print on consent forms. All study procedures, including recruitment and consent, were compliant with the College of Medicine Research and Ethics Committee (COMREC) at the University of Malawi, and the Institutional Review Board (IRB) at Michigan State University.

3.2.2 Measures/Data Collection

The postpartum questionnaire consists of 46 structured items adapted from the Safe Motherhood Needs Assessment Questionnaires developed by the World Health Organization

(WHO, 2001). Data for this study were obtained using the questions that pertained to decisions to return for postpartum care visits, postpartum clinical assessments and health education received after delivery prior to discharge, and acts of midwife kindness prior to discharge. Postpartum clinical assessments, health education and midwife kindness were assessed by questions which required a “Yes”, “No” or “Don’t know” response. Reasons for decisions to return for postpartum care visits were assessed by the following two open-ended questions: a) Why did you (would you) decide to seek care after giving birth (postnatal care of the mother), and b) Why did you (would you) decide NOT to seek care after giving birth (postnatal care of the mother)? A male version of the questionnaire was created by changing the reference person of questions to "your wife". The questionnaires were translated into Chichewa and back-translated into English by the research office at the Kamuzu College of Nursing, University of Malawi. The back-translated questionnaires were compared to the original, and any discrepancies were corrected before data collection.

Two trained Malawian interviewers, who were fluent in English, conducted face-to-face interviews with participants in Chichewa, in the presence of the first author. The one-time interview took place at the homes of the participants, who were a few days to less than one year postpartum. The interviewers interviewed the husband and wife dyad members separately (and simultaneously) in locations, where the husband could not hear what the wife was saying and vice versa, using the male and female versions of the postpartum questionnaire. The first author tossed a coin to determine which interviewer would interview the husband or wife in each dyad to prevent interviewer bias. The interviews lasted, on average, 20 to 30 minutes. The response data were recorded on the questionnaires in English and then entered into a secure data management system that is described below. No identifying information was collected or recorded on the questionnaires; rather, each dyad was identified by a study ID number.

3.2.3 Data Analysis

All data were entered into a secure data management system, REDCap (**R**esearch **E**lectronic **D**ata **Cap**ture). REDCap is a web-based application for building and managing surveys and databases (Harris et al., 2009). REDCap data were exported to STATA 14 statistical software at the end of data collection for analysis (StataCorp, 2015). The data were analyzed using univariate statistics. Principal Components Factor analysis (PCF) was performed to confirm categories of services (postpartum clinical assessments, health education, and midwife kindness). Pearson's correlation was used to test the association of overall evaluation of postpartum care service with postpartum clinical assessments, health education, and midwife kindness. Analysis of variance was used to test whether services received differed by health facility. A p-value that was smaller than 0.05 was considered the criterion for statistical significance.

3.3 Results

Seventy women aged 18 to 40 years (M = 27.2, SD = 6.5) and men aged 20 to 59 years (M = 32.4, SD = 8.3) were interviewed. A higher percentage of men (61%) had 7-12 years of education compared to women (41%). Approximately 46% of participants were legally married and 54% were traditionally married. Traditionally married means that the families came together to perform marital rites according to their cultural norms. The majority of participants (65.7%) reported a monthly household income of less than 10,000 kwacha (Approximately $14). This monthly household income translates into an annual household income of about $170, compared to a 2015 per-capita income of about $381 in Malawi (World Bank, 2016). It was the first pregnancy (primigravida) for 21% of the women. Thirty percent of the women had between 5 to 8 pregnancies. The demographic characteristics of participants are presented in Table 3.1.

Table 3.1. *Participant Characteristics*

Sample Size = 70		
Age (Years) Women Men	**Range** 18-40 20-59	**Mean (SD)** 27.2 (6.5) 32.4 (8.3)
	N	**%**
Marital Status		
Married Living Together	32 38	45.7 54.3
Education (Years of School)		
Women: 0-6 years of school 7-12 years of school **Men:** 0-6 years of school 7-12 years of school	 41 29 27 43	 58.6 41.4 38.6 61.4
Gravida (Number of Pregnancies)		
Primigravida (first pregnancy) Multigravida (2-4 pregnancies) Grand Multigravida (5-8 pregnancies)	15 34 21	21.4 48.6 30.0
Mode of Delivery		
Vaginal Cesarean Section	67 3	95.7 4.3

Concerning postpartum clinical assessments received in health facilities prior to discharge by midwives, approximately 44% of women reported that they had their blood pressures checked, 41% had their temperatures checked, 50% had an abdominal exam, 46% had a vaginal exam/bleeding checked, 34% had a breast exam/asked about soreness, and 77% had their babies examined (Table 3.2). About 11% of women did not receive any of the above six postpartum clinical assessments, while only 16% received all six postpartum clinical assessments. In terms of postpartum health education, 90% received advice on caring for the baby, 81% on family planning, and 94% on breastfeeding (Table 3.2). About 4% of women did not receive any health education before discharge. The average number of postpartum clinical assessments provided by midwives to women prior to discharge varied across the four health facilities, ranging from 2.1 to 3.6 assessments out of the 6 possible assessments,

while the average health education topics addressed ranged from 2.6 to 2.8 by facility, out of 3 education topics mentioned in the questionnaire. However, these average numbers of services received (postpartum clinical assessments and health education) did not significantly differ between health facilities (p=0.099 for postpartum clinical assessments and 0.89 for health education).

Table 3.2. *Women's Evaluation of Postpartum Care Services Received after Delivery from Midwives prior to Discharge in Rural Health Facilities*

Number of women who received services (N=70)	**n**	**%**
Postpartum Clinical Assessments		
Blood Pressure	31	44.3
Temperature	29	41.4
Abdominal Exam	35	50.0
Vaginal Exam/Checked Bleeding	32	45.7
Breast Exam/Soreness	24	34.3
Baby Exam	54	77.1
Postpartum Health Education		
Advice and information on how to care for baby	63	90.0
Discussed Family Planning/Contraception	57	81.4
Discussed Breastfeeding	66	94.3

With respect to midwife kindness, 50% of women said that midwives did not introduce themselves, 44% were not asked if they had any questions/concerns, 43% said midwives did not explain what they were doing before examining them, and 50% did not receive explanation of what to expect as normal after delivery recovery (Table 3.3). Fifty percent of women received at most two of the above acts of kindness from midwives. Despite this, 77% of women believed that the midwives paid close attention to them throughout their stay. More

than half of women (54.3%) said midwives were very kind to them, and 57.1% said they were very satisfied with postpartum care received in the health facility (ratings of 5 on a scale of 1 to 5, with 5 being the highest possible score). About 83% gave an overall evaluation (mean score of overall kindness and overall satisfaction with care variables) of 3.5 or higher on a scale of 1 to 5, with 5 being the highest score possible. This overall evaluation was correlated with level of midwife kindness (r=0.4, p=0.00) and number of postpartum clinical assessments (r=0.3, p=0.02), but not with number of health education topics on which the women were advised (r=0.01, p=0.96).

Table 3.3. *Women's Evaluation: Acts of Kindness by Midwives in Rural Health Facilities prior to Discharge from Postpartum Ward*

Number of women who received services (N=70)	**n**	**%**
Did Midwives…		
Introduce themselves	35	50
Ask if you had any questions or concerns	31	44.3
Provide privacy when they examined you	57	81.4
Explain what they were doing before examination	30	42.9
Explain what you should expect for normal after delivery recovery	35	50

Surprisingly, about 97% of women reported that they returned to a health facility for one-week postpartum care visits after discharge. Reasons why women decided to return to a facility for the one-week postpartum care visit were ranked on the basis of the percentage of women mentioning these reasons as follows: a) advised to return for care (35%); b) wanted examination of baby (29%); c) wanted examination of self (18%); d) wanted examination of both baby and self (13%); e) believed midwives had good reason to ask them to return (3%); and f) had confidence in health facility (1%). When asked what could have made them decide

not to return for postpartum care visits, many women said nothing could have stopped them from returning for care (29%), and that they would never have decided not to return for care (19%). Some women also stated they would have decided not to return for their one-week postpartum care visits if a) they did not feel the need (17%); b) they were not advised to return for care (13%); c) they were sick (9%); d) long distance/no transport (6%), e) mistreated/negative delivery experiences (6%); and f) funeral of close relative (3%).

On the other hand, reasons given by the husbands why they permitted their wives to return for one-week postpartum care visits included: a) wanting an examination of wife (39%); b) wanting an examination of both baby and wife (19%); c) following advice to return for care (14%); d) having confidence in health facility (11%); e) wanting an examination of baby (9%); f) not being able to give medical support to wife (6%); and g) knowing the importance of postpartum care (3%). When asked what could have made them decide not to permit their wives return for care, many husbands stated nothing would have stopped them from allowing their wives to return for care (29%); they had no reason to stop their wives (20%); they would never decide not to let their wives return for care (13%); and they would always encourage their wives to return for care (11%). Some husbands stated they would have decided not to permit their wives return for their one-week postpartum care visits if a) she was mistreated/negative experiences at the health facility (11%); b) she was sick (4%); c) there was a funeral of a close relative (3%); d) she was not advised to return for care (3%); e) did not have transportation or cost was too high (3%); and f) if he was ignorant of the importance of postpartum care (3%). Figure 3.1 presents a comparison of reasons husbands and wives gave for deciding to return for their one-week postpartum care visits in a health facility.

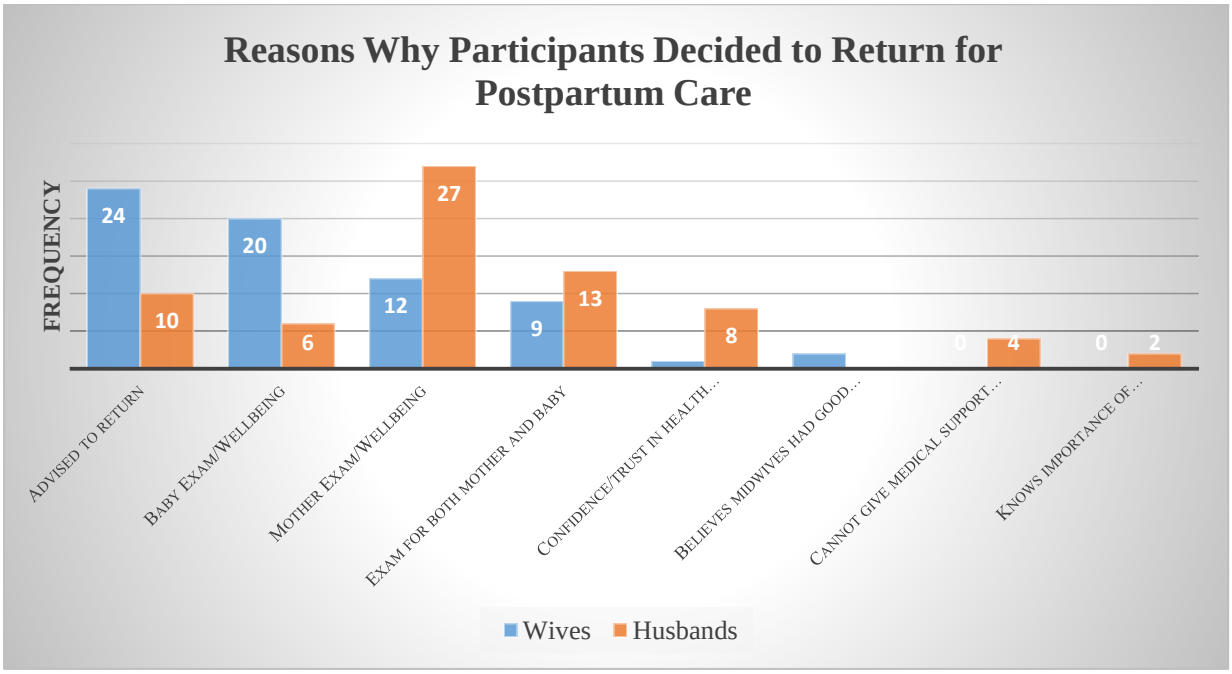


Figure 3.1. *Reasons of Husbands and Wives for Returning to a Rural Health Facility for One-Week Postpartum Care Visits*

3.4 Discussion

Nearly all women (97%) reported that they returned to a health facility for the one-week postpartum care visit. This percentage is higher than reported in other primary studies on postpartum care use in developing countries, where rates of use have been as low as 34% in Nepal (Dhakal et al., 2007) and 35.3% in northern Nigeria (Idris et al., 2013). The high numbers of women returning for postpartum visits in this sample may be the result of a recent campaign in the two study areas for women to use health facility services. A midwife in one Extension Planning Area (EPA) explained that women were told during antenatal care they would have to pay 5000 Malawian Kwacha, if they did not return to the health facility for delivery. In the other EPA, the extension officer explained there was a program that gave women incentives of 5000 Malawian Kwacha if they delivered in a health facility. This push for women to use health facilities for deliveries may have also influenced the high postpartum care use in health facilities. Our results are similar to a study conducted in southeastern Nigeria, where 91.7% of women returned to a health facility for their recommended

postpartum visit (Ugboaja, Berthrand, Igwegbe, & Obi-Nwosu, 2013). Similar to our study area, the high percentage of return for postpartum care visits was attributed to a high level of sensitization in that study area about using maternal healthcare services (Ugboaja et al., 2013).

The principal reason given by women for returning to a health facility for postpartum care is that they were advised by the midwife to return for care. This result highlights the importance of advising families to return for their postpartum care visits after discharge. All midwives should ensure that they inform women of the need to return for postpartum care in the health facility per WHO or country guidelines. Previous studies on postpartum care use have indicated that a lack of awareness or knowledge is a major reason why women do not return for postpartum care services (Dhakal et al., 2007; Ugboaja et al., 2013). About 17% of women in this study stated they would not have returned for care if they did not feel the need. The study by Ugboaja and colleagues found that 21.1% of women did not go for postpartum care because they believed the visit was not necessary (Ugboaja et al., 2013). It is, therefore, important to educate families regarding the importance of returning for their postpartum visits, even when the woman feels fine at the time.

The fact that many husbands stated they would always encourage their wives to return for postpartum care visits, is indicative of the supportive roles husbands can play in ensuring that their wives receive the needed postpartum care. A qualitative study conducted in Jordan on the roles of family members in women's decision to return for postpartum care revealed that husbands and other relatives can either play the supporter role or opponent role (Abushaikha & Khalaf, 2014). In the supporter role, husbands encourage, support, or show positive attitudes towards their wives' decision to seek postpartum care, which propels them to actually return for care (Abushaikha & Khalaf, 2014). In this study, husbands wanted their wives to be examined, especially if she had a C-section or had stitches. Some men wanted to

make sure that the wife was “healed”, while others wanted to be certain there was nothing remaining in her uterus. This implies that husbands will support their wives to return to a health facility for postpartum care, if they have a concern about their wives’ health. Husbands should be encouraged to support their wives to return to health facilities for postpartum care visits even if she had an uncomplicated, normal delivery.

The study results reveal the inadequacy of postpartum care assessments provided to women by midwives in the study areas, as 11% of women did not receive any postpartum clinical assessments after delivery in a health facility prior to discharge, and most women only received partial assessments. The evaluations of inadequate postpartum clinical assessments (blood pressure, temperature, vaginal bleeding, abdominal exam, and breast exam) by women in this sample support the observations made by Chimtembo et al. (2013) in health facilities in the central region of Malawi. Their study observed midwives in health facilities in a district in central Malawi, and results indicated that postpartum women were not monitored and were not physically examined at discharge (Chimtembo et al., 2013).

The inadequacy of postpartum clinical assessments provided to women by midwives prior to discharge may be due to the critical shortage of midwives in rural health facilities. Using 2008 health worker census data, there were 3,896 nurses/midwives in Malawi, which translates into about 0.30 nurses/midwives per 1,000 population (Nove, 2011). The vast majority of health professionals in Malawi are located in urban areas, while the vast majority of the population lives in rural areas (Nove, 2011); thus, access to skilled health professionals in rural areas is inadequate. Some health workers in Malawi have acknowledged that quality of care is poor, and attributed this poor quality to both patient-related factors and facility/staff related factors. Staff-related factors included constraints, such as inadequate resources, inadequate staffing, poor teamwork, and inadequate knowledge/supervision (Chodzaza & Bultemeier, 2010).

The majority of women in this study believed midwives paid close attention to them throughout their stay, and were satisfied with postpartum care services received, despite the fact that most women received partial postpartum clinical assessments. We speculate that this is because these women did not know what assessments they were supposed to receive, and did not base their evaluations of satisfaction on adequacy of care provided to them. For many women, they are satisfied as long as they successfully delivered their babies, and both mother and baby seemed to be fine.

This study did not find any significant differences between the average numbers of postpartum clinical assessments and health education received between the four health facilities. This lack of significance may have been due to the small sample sizes of women from each of the four health facilities. To investigate systematic differences among health care facilities, we recommend that future studies use larger sample sizes. Since the majority of our sample did return to a health facility for the one-week postpartum visit, a finding we did not expect, the reasons given "why they would not have returned" are based on hypothetical information. Data were obtained through self-report, which can lead to social bias in responses and may not reflect the true opinions of participants. This limitation was minimized by using interviewers, who were not only skilled data collectors and fluent in the local language, but were people the participants were likely to discuss issues with freely, because they had worked with the participants on several other studies and built a trusting relationship. Participants were obtained using convenience sampling, which limits the generalizability of the results, thus, the use of probability sampling is recommended in future studies.

3.5 Conclusions

The study results show that the principal reasons, why women return for one-week postpartum care visits, is that they are advised to return for care, and also to make sure their

babies are examined. On the flip side, many husbands permit their wives to return to a health facility for postpartum care visits, because they want their wives to be examined, especially if they have a concern about their wives' health. Prior negative experiences, not perceiving a need for care, and not being advised to return for care may potentially prevent participants from returning for postpartum care visits in a health facility.

The results indicate the necessity of midwife counseling on the importance of returning for postpartum care visits as part of discharge teaching in rural health facilities. Educational campaigns on postpartum care use should focus on the importance of adhering to midwife recommendations, husbands supporting their wives' to seek care for the wellbeing of the wife, and the importance of returning for care even when the wife feels fine. The results also reveal the inadequacy of assessments offered to women by midwives in rural health facilities prior to discharge. Midwives in rural health facilities must improve the adequacy of clinical assessments provided to women after delivery in order to reduce postpartum mortality rates in rural women. Refresher in-service trainings on postpartum care assessments are recommended for midwives.

3.6 Clinical Resources

World Health Organization (WHO) Recommendations for Postpartum Care: http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/

WHO (Regional Office for Europe) Hospital care for mothers and newborn babies' quality assessment and improvement tool, Second Edition 2014: http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2014/hospital-care-for-mothers-and-newborn-babies-quality-assessment-and-improvement-tool

REFERENCES

REFERENCES

Abushaikha, L., & Khalaf, I. (2014). Exploring the roles of family members in women's decision to use postpartum healthcare services from the perspectives of women and health care providers. *Women & Health*, 54(6), 502-512.

Bradley, S., Kamwendo, F., Chipeta, E., Chimwaza, W., de Pinho, H., & McAuliffe, E. (2015). Too few staff, too many patients: a qualitative study of the impact on obstetric care providers and on quality of care in Malawi. *BMC Pregnancy and Childbirth, 15*(65). doi: 10.1186/s12884-015-0492-5

Chimtembo, L.K., Maluwa, A., Chimwaza, A., Chirwa, E., & Pindani, M. (2013). Assessment of quality of postnatal care services offered to mothers in Dedza district, Malawi. *Open Journal of Nursing*, 03(04), 343-350. doi: 10.4236/ojn.2013.34046.

Chodzaza, E., & Bultemeier, K. (2010). Service providers' perception of the quality of emergency obsteric care provided and factors indentified which affect the provision of quality care. *Malawi Medical Journal*, *22*(4), 104-111.

Dhakal, S., Chapman, G.N., Simkhada, P.P., Teijlingen, E.R.v., Stephens, J., & Raja, A.E. (2007). Utilisation of postnatal care among rural women in Nepal. *BMC Pregnancy and Childbirth, 7*(19). doi: 10.1186/1471-2393-7-19

Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J.G. (2009). Research electronic data capture (redcap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, 42(2), 377-381.

Idris, S.H., Sambo, M.N., & Ibrahim, M.S. (2013). Barriers to utilization of maternal health services in a semi-urban community in northern Nigeria: The clients' perspective. *Nigerian Medical Journal*, 54(1), 27-32.

Khanal, V., Adhikari, M., Karkee, R., & Gavidia, T. (2014). Factors associated with the utilisation of postnatal care services among the mothers of Nepal: Analysis of Nepal demographic and health survey 2011. *BMC Women's Health, 14*(19). doi: 10.1186/1472-6874-14-19

Kongnyuy, E., Mlava, G., & van den Broek, N. (2009). Facility-based maternal death review in three districts in the central region of Malawi: An analysis if causes and characteristics of maternal deaths. *Women's Health Issues*, 19, 14-20. doi: 10.1016/j.whi.2008.09.008.

Malawi National Statistical Office, & ICF Macro. (2011). *2010 Malawi demographic and health survey: Key findings*, Calverton, Maryland, USA: NSO and ICF Macro.

Malawi Ministry of Health. (2007). *Road map for accelerating the reduction of maternal and neonatal mortality and morbidity in Malawi*: Third revised version. Malawi: Author

Mullany, B.C., Becker, S., & Hindin, M. (2007). The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: Results from a randomized controlled trial. *Health Education Research,* 22(2), 166-176.

Nove, A. (2011). Midwifery in Malawi: In-depth country analysis. *Background document prepared for the State of the World's Midwifery Report 2011*. Unpublished.' Retrieved from http://www.helse-bergen.no/en/OmOss/Avdelinger/internasjonalt-samarbeid/prosjekt/malawi/Documents/Malawi%20the%20state%20of%20the%20worlds%20midwifery.pdf

Rahman, M.M., Haque, S.E., & Zahan, M.S. (2011). Factors affecting the utilisation of postpartum care among young mothers in Bangladesh. *Health and Social Care in the Community,* 19(2), 138-147.

StataCorp (2015). Stata statistical software: Release 14. College Station, TX: StataCorp LP.

Thaddeus, S., & Maine, D. (1994). Too far to walk: Maternal mortality in context. *Social Science Medicine,* 38(8), 1091-1110.

Titaley, C.R., Hunter, C.L., Heywood, P., & Dibley, M.J. (2010). Why don't some women attend antenatal and postnatal care services?: A qualitative study of community members' perspectives in Garut, Sukabumi and Ciamis districts of West Java province, Indonesia. *BMC Pregnancy and Childbirth,* 10(61). doi: 10.1186/1471-2393-10-61

Ugboaja, J.O., Berthrand, N.O., Igwegbe, A.O., & Obi-Nwosu, A.L. (2013). Barriers to postnatal care and exclusive breastfeeding among urban women in southeastern Nigeria. *Nigerian Medical Journal,* 54(1), 45-50.

Wang, W.J., Alva, S., Wang, S.X., & Fort, A. (2011). Levels and trends in the use of maternal health services in developing countries. *DHS Comparative Reports*. Calverton; USA: ICF Macro.

WHO. (2001). *Safe motherhood needs assessment version 1.1 (revised edition). Part ii. Model survey forms*. Geneva, Switzerland: Author.

WHO. (2010). *Who technical consultation on postpartum and postnatal care*. Geneva, Switzerland: Retrieved from http://whqlibdoc.who.int/hq/2010/WHO_MPS_10.03_eng.pdf.

WHO. (2013). *W.H.O recommendations on postnatal care of the mother and newborn*. Geneva, Switzerland. Retrieved from http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/

WHO. (2015). *Maternal mortality*. Retrieved from http://www.who.int/mediacentre/factsheets/fs348/en/

WHO, & UNICEF. (2010). *Countdown to 2015 decade report (2000–2010): Taking stock of maternal, newborn and child survival.* Washington, DC.

WHO, & UNICEF. (2014). *Trends in maternal mortality: 1990 to 2013. Estimates by who, unicef, unfpa, the world bank and the united nations population division*. Geneva, Switzerland.

Win, T., Vapattanawong, P., & Vong-ek, P. (2015). Three delays related to maternal mortality in Myanmar: A case study from maternal death review, 2013. *Journal of Health Research*, 29(3), 179-187.

World Bank (2016). GDP per capita (current US$). Retrieved from http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MW

CHAPTER 4

HUSBANDS' KNOWLEDGE AND ATTENDANCE AT WIVES' POSTPARTUM CARE AMONG RURAL FARMERS IN CENTRAL MALAWI

Abstract

Objective: To examine husbands' knowledge and attendance at their wives' postpartum care visit in a sample of rural husband-and-wife farmer dyads in central Malawi.

Methods: A cross-sectional matched-pairs survey of 70 husband-and-wife farmer dyads, who lived in rural communities in Ntcheu district, and had a live birth in the past year. Data were collected using an interviewer-administered, structured postpartum questionnaire adapted from WHO Safe Motherhood Needs Assessment Questionnaires. Data analysis included descriptive statistics, bivariate, and matched pairs/conditional logistic regression.

Results: Many husbands did not know about the postpartum assessments (blood pressure, temperature, abdominal, vaginal, breast, baby exams) and education (on caring for baby, family planning, breastfeeding) their wives received from midwives prior to discharge. Percent agreement between dyads' responses was lower on questions referring to assessments than to education. The odds of reporting that the woman received postpartum assessments were greater among husbands than among wives with respect to blood pressure (OR=4.75), temperature (OR=10.45), abdominal exam (OR=5.39), vaginal exam (OR=8.62), breast exam (OR=23.22), baby exam (OR=6.74). Fifty-nine percent of husbands reported they did not go with their wives for one-week postpartum visits. Top three reasons husbands gave for not attending visits were: at work/doing other work, out of town, and did not see the need.

Conclusions: Health education interventions are recommended to encourage midwives to welcome husbands as partners in their wives' care, and to encourage men to make time to accompany their wives for postpartum care visits. These could result in improved knowledge

and communication among husbands and wives, and may help in prompt decision-making in an emergency obstetric complication.

Keywords: Men’s involvement, postpartum care, men’s knowledge, postpartum assessments

4.1 Introduction

Women in rural areas face particularly high risks of maternal mortality due to inadequate healthcare services, poverty, distance to health facilities, lack of information, and cultural practices (WHO, 2015). Many women living in rural communities do not receive adequate postpartum care, because local access in such areas is grossly insufficient (Metwally et al., 2013). For example, women living in urban areas have been found to be about 4 times more likely to use postpartum care services than their rural counterparts (Khanal, Adhikari, Karkee & Gavidia 2014). Rural women with farming as the main occupation or wives of farmers are even more vulnerable to postpartum mortality given that they have significantly lower levels of postpartum care use (Dhakal et al., 2007; Khanal et al., 2014; Rahman et al., 2011). In one study in Nepal, housewives had 7.25 times greater odds of using postpartum care services than women, who reported farming as their main occupation (Dhakal et al., 2007).

In rural Sub-Saharan Africa (SSA), many people draw their livelihoods from farming and related activities (Ogunlela & Mukhtar, 2009). Most of the farmers operate at small, subsistence scales. In Malawi, 85% of people live in rural areas, where a vast majority of households (90%) depend on rain-fed subsistence farming (Bazile et al., 2015). Women bear the responsibility for 80% of food production in Africa, including labor-intensive work such as planting, fertilizing, weeding, harvesting, and marketing (Wamala, 2009). Because women in Sub-Saharan Africa are more involved in agricultural activities than their male counterparts and provide much of the labor (Ogunlela & Mukhtar, 2009), it is critical to protect their health. Not only do women care for families; they also serve the principal role in agricultural production, making them the economic foundation of many families (Ogunlela & Mukhtar, 2009).

Gender-based power inequalities in decision making constrain women's access to maternal health services (Fotso, Higgins-Steele, & Mohanty, 2015). The decisions, behavior, knowledge, and attitudes of men play an integral, and often dominant, role in determining the health status of women. In many settings in Sub-Saharan Africa, husbands, as household heads, are the decision makers; thus, the ability of women to seek health care is often determined by their husbands (Mullany et al., 2007). For example, a study in Sudan found that a woman with postpartum hemorrhage bled for seven hours while waiting for her husband to return and make the decision for her to seek care (Mohammed et al., 2011). In Malawi, husbands play the critical role of providing financial support for obstetric care, and therefore, have a great influence on where and when care is sought (Bowie & Geubbels, 2013). In some parts of Malawi, husbands are the decision makers even in the event of an obstetric complication (Bowie & Geubbels, 2013). Given the decision-making power of men, it is critical to increase men's knowledge of their wives' care and awareness of postpartum complications, so as to enable them make informed decisions about where and when to assist their wives in seeking care following a birth.

Despite the economic dominance and decision-making power of men in Sub-Saharan Africa, their role in maternity care is understudied (Iliyasu, Abubakar, Galadanci, & Aliyu, 2010). Previous studies on men's involvement in maternal healthcare in Sub-Saharan Africa have focused on sexual and reproductive health issues (Onyango, Owoko, & Oguttu, 2010), antenatal care, and prevention of mother-to-child transmission of HIV (Aluisio et al., 2011; Asefa, Geleto, & Dessie, 2014; Ditekemena et al., 2012; Kululanga, Sundby, Malata, & Chirwa, 2011). Male involvement in maternity health care in Malawi is mainly associated with antenatal care as well as couple HIV counseling and testing (Kululanga, Sundby, Malata, & Chirwa, 2012). Further research is critical to explore the involvement of husbands

in postpartum care since the majority of maternal deaths occur during the postpartum period (Islam 2007).

Given the role of African men in decision-making regarding their wives' care, it is imperative that men's participation in maternal health care be increased. Most African men do not generally accompany their wives for maternity care. Qualitative studies in Ghana and Kenya on antenatal and delivery care have found that, although men recognized the benefits of their involvement in maternity care, few men actually accompanied their wives for services, unless there was an obstetric complication (Ganle & Dery, 2015; Kwambai et al., 2013). In terms of postpartum care, a study in Nigeria indicated that the majority of husbands gave their wives money for transport or drugs (80%), but only 12% accompanied their wives for postpartum care despite the fact that 60.2% of the wives agreed that husbands should accompany their spouses for postpartum care (Iliyasu et al., 2010). Some of the reasons for this lack of involvement in their wives' postpartum care include ignorance, poverty, and cultural factors (Iliyasu et al., 2010). Several other studies have indicated that men view maternity care as women's business, and their responsibility is only to provide financial and/or material support for maternity care (Arunmozhi, Jayanthi, & Suresh, 2015; Ganle & Dery, 2015; Kwambai et al., 2013; Kululanga et al., 2012; Singh, Lample, & Earnest, 2014).

The purpose of this study was to examine husbands' knowledge and attendance at their wives' postpartum care in a sample of husband-and-wife farmer dyads living in rural communities in central Malawi. To address this objective, we posed the following specific research questions: 1a) How much do husbands know about postpartum care assessments and education their wives receive prior to discharge from health facilities? 1b) How often do husbands and wives agree/disagree on responses to questions on postpartum care assessments and education? 2) Do husbands accompany their wives to their one-week postpartum care visits? If no, why did husbands not accompany their wives? The results of this study will

enhance our understanding of husband's knowledge and attendance of postpartum care, and serve as a guide for developing strategies to increase male involvement in postpartum care in Malawi.

4.2 Methods

4.2.1 Design, Sample, and Setting

A descriptive, cross-sectional matched-pairs survey design was used. Participants were a convenience sample of 70 husband-and-wife dyads, who were 18 years of age or older, and able to communicate in Chichewa. Women were included only if they had a live birth in the past year, and a spouse available to participate with them. All participants were subsistence farmers living in rural communities in two Extension Planning Areas (EPAs) in the Ntcheu district of central Malawi. EPAs are operational jurisdictional locales that typically encompass a cluster of villages. The farmers were part of the MSU Africa RISING project, an established program of research in Malawi working with rural farmers on agro-ecological intensification. A sample size of 70 husband-and-wife dyads was sufficient to discover 20 percentage point difference and assumed level of agreement at 50% in one of the groups. (Assumed significance level: 0.05: power: 0.86; Assumed minimum correlations among dyadic responses: $r = 0.4$.).

4.2.2 Postpartum Care Questionnaire

The postpartum questionnaire consists of 46 structured items adapted from the Safe Motherhood Needs Assessment Questionnaires developed by the World Health Organization (WHO, 2001). Data for this study were obtained using the questions that pertained to postpartum assessments and education received from midwives in health facilities prior to discharge, and whether husbands accompanied their wives for their one-week postpartum care visits after discharge. A male version of the questionnaire was created by changing the

reference of questions to "your wife". Questions required a “Yes”, “No” or “Don’t know” response. Husbands who reported that they did not go with their wives were asked “Why did you not go with her?” The questionnaires were translated into Chichewa and back-translated into English by the research office at the Kamuzu College of Nursing, University of Malawi. The back-translated questionnaires were compared to the original, and any discrepancies were corrected before data collection.

4.2.3 Data Collection Procedure

The investigator worked with Extension Officers in each of the EPAs to identify households that had a baby less than one-year-old. Extension officers in Malawi are trained personnel under the Ministry of Agriculture, who work in EPAs to educate and provide advisory services to farmers on a wide range of issues, among which are farming practices, harvesting, disease and pest control, and new technologies. The research team (first author, extension officer, and translators) visited each household and conducted interviews in their homes. The husband and wife dyads were interviewed separately (and simultaneously) in locations, where the husband could not hear what the wife was saying and vice versa, using the male and female versions of the postpartum questionnaire. All interviews were conducted by two Malawian translators in Chichewa, in the presence of the first author. The translators had at least a bachelor's degree and prior data collection experience in the study areas. A coin toss was used to determine which translator would interview the husband or wife for each dyad, to prevent interviewer bias. Interview data were collected on paper, before being entered into a secure data management system. No identifying information was collected during the interviews. All data, although conducted in Chichewa, were recorded on paper by the translators in English using a study ID for each dyad and participant.

4.2.4 Ethical Considerations

All participants were offered consent in their native language, Chichewa, and were asked to provide consent by providing their thumb print on consent forms. All study procedures, including recruitment and consent, were approved by the College of Medicine Research and Ethics Committee (COMREC) at the University of Malawi, and the Institutional Review Board (IRB) at Michigan State University.

4.2.5 Data Analysis

All data were entered into a secure data management system, REDCap (**R**esearch **E**lectronic **D**ata **Cap**ture). REDCap is a web-based application for building and managing surveys and databases (Harris et al., 2009). REDCap data were exported to STATA 14 statistical software for analysis (StataCorp, 2015). Data were analyzed using descriptive statistics, bivariate analysis, and matched pairs/conditional logistic regression analysis. The sign test was used to test equality of matched pairs. A binary variable was created indicating agreement [=1] or disagreement [=0] among husbands and wives. This binary variable was created for dyads, whenever husbands' and wives' responses were a "yes" or "no" ("don't know" responses were excluded). Logistic regression for binary outcomes (yes or no responses only), and reporting odds ratios (OR), was used to test differences between husband-and-wife dyad responses. Since the data for men and women were not independent samples, but pairs of husbands and wives, they were treated as correlated by using longitudinal/panel data analysis with a population-averaged (PA) estimator. A p-value of less than 0.05 was considered to be statistically significant.

4.3 Results

Participants included 70 women aged 18 to 40 years (M = 27.2, SD = 6.5) and men aged 20 to 59 years (M = 32.4, SD = 8.3). Only 41% of women had seven or more years of

education, while 61% of men had seven or more years of education. Approximately 46% of participants were legally married and 54% were living together who were traditionally married. Traditionally married means that the families came together to perform marital rites according to their cultural norms. The majority of participants (65.7%) reported a monthly household income of less than 10,000 kwacha, which translates into an annual household income of about $170, compared to a 2015 per-capita income of about $381 in Malawi (World Bank, 2016). The demographic characteristics of participants are presented in Table 4.1.

Table 4.1. *Participant Characteristics*

Sample Size = 70		
Age (Years) Women Men	**Range** 18-40 20-59	**Mean (SD)** 27.2 (6.5) 32.4 (8.3)
	n	**%**
Marital Status		
Legally Married Traditionally Married	32 38	45.7 54.3
Education (Years of School)		
Women: 0-6 years of school 7-12 years of school **Men:** 0-6 years of school 7-12 years of school	 41 29 27 43	 58.6 41.4 38.6 61.4
Gravida (Number of Pregnancies)		
Primigravida (first pregnancy) Multigravida (2-4 pregnancies) Grand Multigravida (5-8 pregnancies)	15 34 21	21.4 48.6 30.0
Mode of Delivery		
Vaginal Cesarean Section	67 3	95.7 4.3

4.3.1 Husbands' knowledge of their wives' postpartum care

We assessed husbands' knowledge regarding postpartum care assessments and education, which their wives received from midwives in health facilities prior to discharge. For postpartum assessments, about 57% (n=40) of husbands reported they did not know if their wives had their blood pressures checked, 61% (n=43) did not know if their wives had their temperatures checked, 60% (n=42) did not know if their wives had an abdominal exam, 53% (n=37) did not know if their wives had a vaginal exam/bleeding checked, 64% (n=45) did not know if their wives had a breast exam/asked about soreness, and 27% (n=19) did not know if their babies were examined (Table 4.2). In terms of postpartum education, 39% (n=27) of husbands did not know if their wives received advice on caring for the baby, 30% (n=21) did not know if their wives received advice on family planning, and 26% (n=18) did not know if their wives received advice on breastfeeding (Table 4.2). Approximately 17% (n=12) of husbands answered "do not know" to all nine questions, while only 24% (n=17) gave a "yes" or "no" response to all nine questions. The question that received the most "do not know" responses from husbands was on breast exam (64%), while the question that received the least was on education about breastfeeding (26%).

4.3.2 Agreement/disagreement between husbands' and wives' responses

The sign test was used to test equality of matched pairs between the husband-and-wife dyads. The results for all questions on postpartum assessments were significant ($p<0.05$), indicating that the median of differences between husbands' and their wives' responses for those questions is different from zero. The test, however, was not significant for questions on postpartum education. We analyzed the agreement/disagreement between dyad responses to the postpartum assessment and education questions, restricting the analysis to dyads in which both husband and wife gave an answer of "yes" or "no" (excluding "do not know" responses). The questions on postpartum assessments and education were rank-ordered based

on the percent agreement among husbands and wives as follows: breast exam/soreness (28%); temperature (41%); vaginal exam/bleeding (49%); blood pressure (57%); abdominal exam (64%); baby exam (75%); discussed family planning/contraception (78%); discussed breastfeeding (94%); and advice on how to care for baby (95%). Percents of agreements among the number of dyads who answered "yes" or "no" to each question are presented in Table 4.2. Husbands who indicated they did not know some of the answers, tended to agree more with their wives on postpartum assessment questions; however, these results were not statistically significant.

Table 4.2. *Husbands Knowledge about Postpartum Care Assessments and Education their Wives Received from Midwives in Health Facilities, Prior to Discharge*

	% Agreement (n/N)*	**% Do not know (n)**
Postpartum Assessments		
Blood Pressure	56.7 (17/30)	57.1 (40)
Temperature	40.7 (11/27)	61.4 (43)
Abdominal Exam	64.3 (18/28)	60.0 (42)
Vaginal Exam/Checked Bleeding	48.5 (16/33)	52.9 (37)
Breast Exam/Soreness	28.0 (7/25)	64.3 (45)
Baby Exam	74.5 (38/51)	27.1 (19)
Postpartum Education		
Advice and information on how to care for baby	95.4 (41/43)	38.6 (27)
Discussed Family Planning/Contraception	77.6 (38/49)	30.0 (21)
Discussed Breastfeeding	94.2 (49/52)	25.7 (18)

* n/N = number of dyads who agreed on responses/total number of dyads who answered "yes" or "no" to responses

Table 4.3 presents the results from the logistic regressions comparing the responses of husbands and their wives. The odds of saying "yes" to the statement that midwives measured the woman's blood pressure were 4.75 times greater among husbands than among wives (OR=4.75, p<0.01, CI=1.90, 11.90). Similarly, the odds of saying "yes" that midwives checked for temperature (OR=10.45, p<0.01, CI=3.12, 35.04), performed an abdominal exam (OR=5.39, p=0.01, CI=1.49, 19.53), a vaginal exam (OR=8.62, p<0.01, CI=2.92, 25.41), a breast exam (OR=23.22, p=0.01, CI=4.81, 112.02) , and a baby exam (OR=6.74, p=0.02, CI=1.33, 34.25) were all greater among husbands than among their wives. As the results in Table 4.3 indicate, these odds tend to be even larger for most assessments after controlling for age, marital status, length of marital status, number of times pregnant, years of school, mode of delivery (vaginal or C-section), and whether the woman had any complications. In short, husbands often assumed that many of these assessments were performed, when their wives did not report them.

Concerning the associations with some of the background characteristics, husbands' assumptions that their wife had her blood pressure measured were greater among dyads with complications than among dyads without complications (OR=4.15, p<0.05, CI=1.01, 17.05). Likewise, these odds increased with each additional year of the husband's age by 16% (OR=1.16, p<0.01, CI=1.04, 1.28), and by 65% (OR=1.65, p=0.01, CI=1.12, 2.43) for each additional prior pregnancy. The husband's assumption that the baby was examined prior to discharge was greater among dyads who were legally married than among dyads who were living together (OR=4.48, p=0.03, CI=1.14, 17.53). The odds of saying "yes" that midwives discussed breastfeeding with the woman were 94% lower among dyads, where the wife had a vaginal delivery than among dyads with women who had a C-section (OR=0.06, p=0.04, CI=0.004, 0.86).

Table 4.3. *Logistic Regression (using population-averaged panel analysis) for Differences between Husband-and-Wife Dyad Responses*

N=70	**Unadjusted OR [95% CI]**	**Adjusted OR* [95% CI]**
Blood Pressure n=30	4.75** [1.90, 11.90]	6.99** [1.22, 40.06]
Temperature n=27	10.45** [3.12, 35.04]	13.99** [1.80, 108.38]
Abdominal Exam n=28	5.39** [1.49, 19.53]	2.73 [0.51, 14.61]
Vaginal Exam/Checked Bleeding n=33	8.62** [2.92, 25.41]	10.35** [1.80, 59.64]
Breast Exam/Soreness n=25	23.22** [4.81, 112.02]	43.24** [2.50, 746.45]
Baby Exam n=51	6.74** [1.33, 34.25]	19.11** [1.60, 227.66]
Advice and information on how to care for baby n=43	- -	- -
Discussed Family Planning/Contraception n=49	2.99 [0.69, 12.91]	5.00 [0.73, 34.19]
Discussed Breastfeeding n=52	2.04 [0.17, 23.97]	1.72 [0.03, 97.95]

Note: Advice and information on how to care for baby could not be computed because of little variation in the outcome variable

* Adjusted for age, marital status, length of marital status, number of times pregnant, years of school, mode of delivery (vaginal or C-section), and any complications (yes or no).

** P-value less than 0.05

n = number of pairs (dyads) who answered "yes" or "no" to responses

4.3.3 Husbands' attendance of their wives' one-week postpartum care visits

We asked husbands whether they went with their wives for their one-week postpartum care visits. About 59% (n=38) of husbands reported they did not go with their wives for the postpartum care visit. Husbands were then asked "why did you not go with her?" Responses

to the latter question were ranked on the basis of the percentage of husbands mentioning specific reasons as follows: 1) at work/busy doing other work (39%, n=15); 2) out of town (26%, n=10); 3) does not see the need/wife did not ask (13%, n=5); 4) running household errands (11%, n=4); 5) attending a funeral (8%, n=3); and 6) felt she had to go with a fellow woman (3%, n=1). Figure 4.1 presents the reasons why husbands did not go with their wives for postpartum care visits. Whether husbands went with their wives for postpartum care visits or not, was not related to the age of husband (OR=0.99, p=0.68, CI=0.92, 1.05); distance to health facility (OR=1.06, p=0.15, CI=0.98, 1.15); number of times pregnant (OR=0.90, p=0.41, CI=0.70, 1.15); length of marriage/living together (OR=0.97, p=0.43, CI=0.90, 1.05); marital status (OR=0.90, p=0.84, CI=0.33, 2.44); monthly household income (OR=0.94, p=0.13, CI=0.88, 1.02); years of school of husband (OR=0.90, p=0.21, CI=0.77, 1.06); mode of delivery (OR=3.08, p=0.37, CI=0.26, 35.90); and whether wife had any complications (OR=1.96, p=0.28, CI=0.57, 6.72).

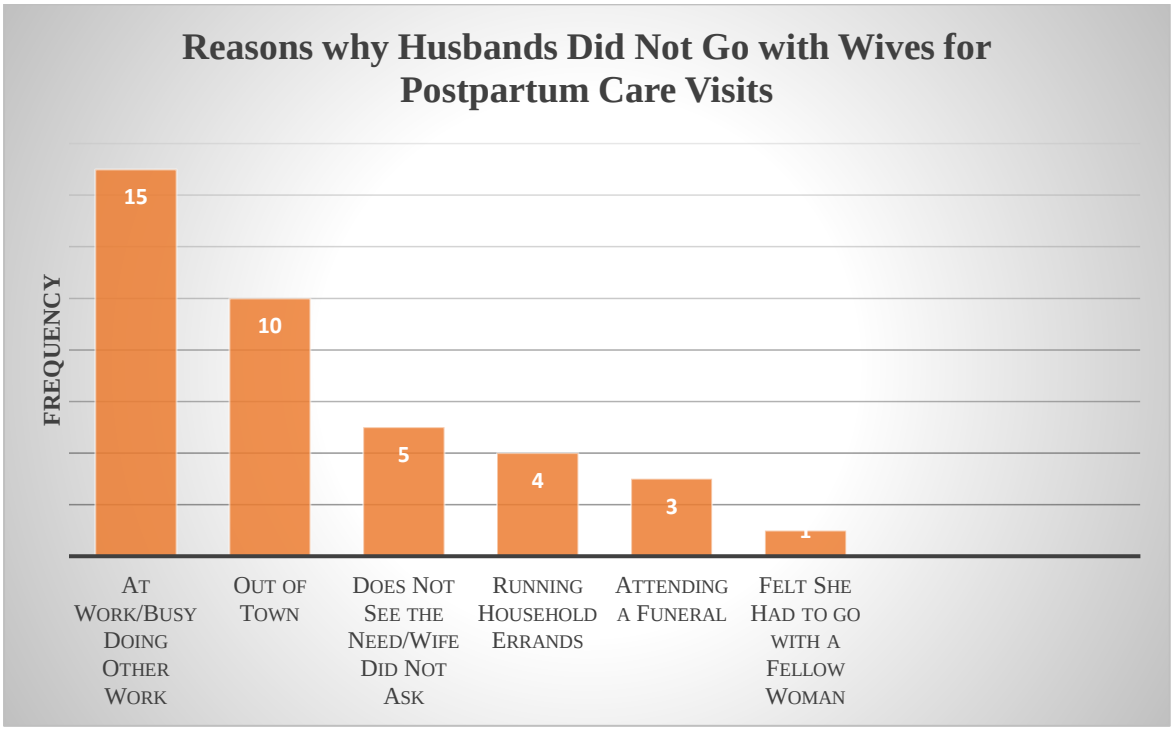


Figure 4.1. *Reasons why Husbands Did Not Go with their Wives for One-Week Postpartum Care Visits*

4.4 Discussion

Many husbands answered "do not know" to questions about postpartum assessments (range 53% to 64%) and education (range 26% to 39%) their wives received from midwives prior to discharge in health facilities. This may be because husbands are not usually allowed in examination rooms in health facilities. In a qualitative study in Malawi, husbands indicated that they are ignored by health care providers when they accompany their wives for antenatal care, because they are not allowed in the examination room, even in health facilities that provide private examination rooms (Kululanga et al., 2012). In another qualitative study in India on male participation in maternal care, many men said they are not allowed into the hospital and only get information from their wives (Arunmozhi et al., 2015). Since husbands tend to wait outside health facilities for their wives, they may not know what assessments their wives received if the wife does not inform them. Health care providers are encouraged to welcome husbands into examination rooms, in facilities where privacy is provided, in order to encourage them to be more involved in their wives' postpartum care and wellbeing. Since some health care facilities are unable to provide private examination rooms, it may not be ideal for the husband to be present during postpartum assessments, thus, wives should be encouraged to communicate and share information with their husbands.

The results also showed disagreements between husbands' and their wives' responses to questions, especially questions on postpartum assessments. Further, the odds of saying "yes" that the woman received postpartum assessments prior to discharge in health facilities was greater among husbands than among wives. We speculate that husbands tended to say "yes" that their wives received postpartum assessments, because they did not actually know, but just assumed that the wife would be assessed, since she was at a health facility.

More than half of husbands (59%) reported they did not go with their wives for their one-week postpartum care visits. This result on postpartum care attendance (41%

accompanied wives) is higher than a study conducted in Nigeria where only 12% of married men reported they accompanied their wives for postpartum care visits (Iliyasu et al., 2010). Likewise, a study on antenatal care attendance, based on pregnant women's reports, found that about 20% of husbands accompanied their wives for antenatal care visits (Asefa et al., 2014). A qualitative study on husbands' attendance of reproductive health services in Kenya also indicated that men rarely accompanied their wives to reproductive health clinics, with excuses of being busy or that reproductive health is a woman's responsibility (Onyango et al., 2010). Many husbands in this study gave similar excuses of being at work or busy doing other work, out of town, and do not see the need.

It is important to note that not attending postpartum visits does not necessarily mean husbands are not interested in the wellbeing of their wives. From the results of Chapter 3 of this dissertation, husbands permitted their wives to return for postpartum care visits, because they were concerned about the wellbeing of the wife. The poor attendance may be due to the limited opportunities for husbands to be involved in their wives' care in many health facilities in Sub-Saharan Africa. Several studies have highlighted that the barrier to men's participation in their wives' maternity care is the result of cultural perceptions and gender role norms that maternity care is women's business, and the role of husbands is only to provide financial and material support (Ganle & Dery, 2015; Kwambai et al., 2013; Singh et al., 2014). This women-centered view of maternity care in Sub-Saharan Africa may also explain the lack of space to accommodate male partners in health facilities (Arunmozhi et al., 2015; Ditekemena et al., 2012; Kwambai et al., 2013). Thus, participation often ends at accompanying the wife to a health facility and remaining outside the facility.

Community interventions should encourage husbands to support their wives to return for postpartum care visits for the wellbeing of the wife. While it is important to advocate for husbands to accompany their wives for maternity care, it is equally important to actually

involve them as partners in their wives' care once they get to the health facility. Husbands' participation in their wives' postpartum care could result in more knowledge and awareness of their wives' health status, and could enhance communication between husband and wife related to postpartum care. This improved knowledge and communication may help in prompt decision-making for seeking emergency postpartum care in the event of any postpartum complications. Future research studies are needed to examine whether husbands' participation in postpartum care could lead to improved knowledge, reduced delays to seeking care, and reduced postpartum morbidity.

One study on maternity care in general, found that men's younger age and formal education were independent predictors of male participation in maternity care (Iliyasu et al., 2010). Another study on maternal to child transmission of HIV found that age, marital status, years of education, and income were significantly associated with husbands' participation in prevention of maternal to child transmission of HIV services (Ditekemena et al., 2012). However, in this study, we did not find statistically significant relationships between whether husbands went with their wives for postpartum care visits or not, with age of husband, distance to health facility, number of times pregnant, length of marriage/living together, marital status, monthly household income, years of school of husband, mode of delivery, and whether wife had any complications.

A limitation of this study is that we had no way of verifying whether the women were actually assessed or not, since the information in this study was based on self-reports and no identifying information was collected. We recommend that future studies include chart-reviews, in addition to self-reported data. Also, the sample size available for analyzing responses to particular questions was small due to many missing responses ("do not know" responses); therefore, a larger sample size is recommended in future studies. The

generalizability of the results of this study is also limited, as participants were obtained using convenience sampling. Probability sampling would allow for greater generalizability.

4.5 Conclusions

The results of this study revealed that many husbands did not know about postpartum assessments and education their wives received from midwives in health facilities prior to discharge. Second, more than half of husbands did not go with their wives for their one-week postpartum care visits, with top three reasons being at work/busy doing other work, out of town, and did not see the need. From the results of this study, we recommend that midwives should be encouraged to welcome husbands as partners in their wives' care, by either allowing them into private examination rooms or providing them with information on the status of their wives' health. Women should also be encouraged to have open discussions with their husbands about the care they received in health facilities, and any health issues or concerns from visits. This could result in improved knowledge and communication among husbands and wives, and may help in prompt decision-making to seek care in case of an emergency obstetric complication. Since husbands in this study seem to be interested in the wellbeing of their wives, health education campaigns/interventions should encourage husbands to support their wives to return for postpartum care visits for the wellbeing of the wife. Further research on husbands' participation and knowledge of postpartum care is needed, and how improved knowledge may increase prompt access to care, resulting in decreased postpartum morbidity.

REFERENCES

REFERENCES

Aluisio, A., Richardson, B.A., Bosire, R., John-Stewart, G., Mbori-Ngacha, D., & Farquhar, C. (2011). Male antenatal attendance and HIV testing are associated with decreased infant HIV infection and increased HIV-free survival. *Journal of Acquired Immune Deficiency Syndrome,* 56(1), 76-82. doi: 10.1097/QAI.0b013e3181fdb4c4

Arunmozhi, R., Jayanthi, T.P., & Suresh, S. (2015). Male participation in maternal and newborn care: A qualitative study from urban Tamil Nadu, India. *Journal of Evolution of Medical and Dental Science,* 4(32), 5484- 5491.

Asefa, F., Geleto, A., & Dessie, Y. (2014). Male partners involvement in maternal ANC care: The view of women attending ANC in Harari public health institutions, eastern Ethiopia. *Science Journal of Public Health,* 2(3), 182-188.

Bazile, J., Rigodon, J., Berman, L., Boulanger, V.M., Maistrellis, E., Kausiwa, P., & Yamin, A. (2015). Intergenerational impacts of maternal mortality: Qualitative findings from rural Malawi. *Reproductive Health,* 12(1), S1. doi: 10.1186/1742-4755-12-S1-S1

Bowie, C., & Geubbels, E. (2013). Epidemiology of maternal mortality in malawi–2 nd. Retrieved from http://www.medcol.mw/commhealth/publications/epi%20book/Maternal%20health%20v2%202.pdf

Dhakal, S., Chapman, G.N., Simkhada, P.P., Teijlingen, E.R.v., Stephens, J., & Raja, A.E. (2007). Utilization of postnatal care among rural women in Nepal. *BMC Pregnancy and Childbirth, 7*(19). doi: 10.1186/1471-2393-7-19

Ditekemena, J., Koole, O., Engmann, C., Matendo, R., Tshefu, A., Ryder, R., & Colebunders, R. (2012). Determinants of male involvement in maternal and child health services in Sub-Saharan Africa: A review. *Reproductive Health, 9*(1), 32. doi: 10.1186/1742-4755-9-32

Fotso, J.C., Higgins-Steele, A., & Mohanty, S. (2015). Male engagement as a strategy to improve utilization and community-based delivery of maternal, newborn and child health services: Evidence from an intervention in Odisha, India. *BMC Health Services Research,* 15(1*)*, S5. doi: 10.1186/1472-6963-15-S1-S5

Ganle, J. K., & Dery, I. (2015). 'What men don't know can hurt women's health': a qualitative study of the barriers to and opportunities for men's involvement in maternal healthcare in Ghana. *Reproductive Health,* 12(1). doi: 10.1186/s12978-015-0083-y

Guadagno, M., Mackert, M., & Rochlen, A. (2013). Improving prenatal health setting the agenda for increased male involvement. *American Journal of Men's Health.* doi: 10.1177/1557988313490785

Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J.G. (2009). Research electronic data capture (redcap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics,* 42(2), 377-381.

Iliyasu, Z., Abubakar, I.S., Galadanci, H.S., & Aliyu, M.H. (2010). Birth preparedness, complication readiness and fathers' participation in maternity care in a northern Nigerian community. *African Journal of Reproductive Health,* 14(1), 21-32.

Islam, M. (2007). The safe motherhood initiative and beyond. *Bulletin of the World Health Organization, 85*(10). doi: 10.2471/BLT.07.045963

Khanal, V., Adhikari, M., Karkee, R., & Gavidia, T. (2014). Factors associated with the utilization of postnatal care services among the mothers of Nepal: Analysis of Nepal demographic and health survey 2011. *BMC Women's Health, 14*(19). doi: 10.1186/1472-6874-14-19

Kwambai, T. K., Dellicour, S., Desai, M., Ameh, C. A., Person, B., Achieng, F., ... & Ter Kuile, F. O. (2013). Perspectives of men on antenatal and delivery care service utilization in rural western Kenya: A qualitative study. *BMC Pregnancy and Childbirth, 13*(1). doi: 10.1186/1471-2393-13-134

Kululanga, L.I., Sundby, J., Malata, A., & Chirwa, E. (2011). Striving to promote male involvement in maternal health care in rural and urban settings in Malawi – A qualitative study. *Reproductive Health,* 8, 36-36. doi: 10.1186/1742-4755-8-36

Kululanga, L.I., Sundby, J., Malata, A., & Chirwa, E. (2012). Male involvement in maternity health care in Malawi. *African Journal of Reproductive Health,* 16(1), 145-158.

Metwally, A.M., Abdel-Latif, G.A., Salama, S.I., Tawfik, A., Elmosalami, D.M., & Mohsen, A.M.A. (2013). Care seeking behaviors of rural women in Egypt: Community based study. *Journal of Applied Sciences Research,* 9(6), 3767-3780.

Mohammed, A.A., Elnour, M.H., Mohammed, E.E., Ahmed, S.A., & Abdelfattah, A.I. (2011). Maternal mortality in Kassala state-eastern Sudan: Community-based study using reproductive age mortality survey (RAMOS). *BMC Pregnancy and Childbirth,* 11(1). doi: 10.1186/1471-2393-11-102

Mullany, B.C., Becker, S., & Hindin, M. (2007). The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: Results from a randomized controlled trial. *Health Education Research,* 22(2), 166-176.

Ogunlela, Y.I., & Mukhtar, A.A. (2009). Gender issues in agriculture and rural development in Nigeria: The role of women. *Humanity & Social Sciences Journal,* 4(1), 19-30.

Onyango, M.A., Owoko, S., & Oguttu, M. (2010). Factors that influence male involvement in sexual and reproductive health in western Kenya: A qualitative study. *African Journal of Reproductive Health,* 14(4 Spec no.), 32-42.

Rahman, M.M., Haque, S.E., & Zahan, M.S. (2011). Factors affecting the utilization of postpartum care among young mothers in Bangladesh. *Health and Social Care in the Community*, 19(2), 138-147.

Singh, D., Lample, M., & Earnest, J. (2014). The involvement of men in maternal health care: Cross-sectional, pilot case studies from Maligita and Kibibi, Uganda. *Reproductive Health*, 11(1). doi: 10.1186/1742-4755-11-68

StataCorp (2015). Stata statistical software: Release 14. College Station, TX: StataCorp LP.

Wamala, S. (2009). The impact of globalization on maternal and child health. In J. Ehiri (Ed.), *Maternal and child health: Global challenges, programs, and policies* (p. 143). New York, NY: Springer.

WHO. (2001). *Safe motherhood needs assessment version 1.1 (revised edition). Part ii. Model survey forms*. Geneva, Switzerland: Author.

WHO. (2015). *Maternal mortality*. Retrieved from http://www.who.int/mediacentre/factsheets/fs348/en/

World Bank (2016). GDP per capita (current US$). Retrieved from http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MW

CHAPTER 5: SUMMARY

The overall objective of this dissertation study was to examine the use of postpartum care services within the context of developing countries and, more specifically, among rural communities in the central region of Malawi. This was a three-manuscript dissertation. The first manuscript (chapter 2) was an integrative review of the literature that identified factors affecting the use of postpartum care services in developing countries. The second manuscript (chapter 3), based on primary research data, examined 1) women's evaluation of postpartum care services (postpartum clinical assessments, health education, and midwife kindness) received from midwives prior to discharge in rural health facilities, and 2) husband-and-wife farmer dyads' reasons for their decisions to return or not return for one-week postpartum care visits in rural central Malawi. The third manuscript (chapter 4), also based on primary research data, examined husbands' knowledge and attendance at their wives' postpartum care, in a sample of husband-and-wife farmer dyads living in rural communities in central Malawi. The primary study was conducted in Ntcheu district, central Malawi, and included a convenience sample of 70 husband-and-wife farmer dyads living in rural communities, who had a live birth in the past year at one of four health facilities in Ntcheu district.

This dissertation study made significant contributions to science. The integrative review contributed to the postpartum literature by synthesizing factors affecting the use of postpartum care services from primary research studies (original research) in developing countries, using the three delays framework. The primary study of this dissertation was one of a few postpartum care studies in Sub-Saharan Africa to evaluate the World Health Organization (WHO)'s recommended postpartum clinical assessments in the first 24 hours provided to women in health facilities prior to discharge in Malawi. Very few studies on postpartum care use in Sub-Saharan Africa include husbands, despite their decision-making power. This dissertation was one of a few studies that explored the reasons behind husbands'

decisions regarding their wives' postpartum care. The study also examined husbands' knowledge and attendance at their wives' postpartum care. The innovation in methods was the inclusion of husband-and-wife dyads. To the best of our knowledge, no other postpartum care utilization study in Malawi has interviewed husband-and-wife dyads separately, but simultaneously. Finally, this dissertation contributed to science by extending the application of the three delays model to postpartum care use in developing countries. From the integrative review (chapter 2), factors affecting the use of postpartum care at each delay phase were identified from qualitative and bivariate analyses. In addition, results from chapter 3 identified facilitators of decision to return for postpartum visits. The adapted model of three delays to postpartum care in developing countries is presented in Figure 5.1.

The results of this dissertation have implications for designing effective interventions that can decrease postpartum complications and maternal mortality among one of the most vulnerable and marginalized groups in Sub-Saharan Africa—women who are farmers and reside in rural areas. By focusing on farmers in rural areas, specifically female farmers, the results of this research have important implications for Malawi's food security, as over 80 percent of the country's population subsists on agriculture, and women play paramount roles from land preparation to harvesting and marketing.

The results of the integrative review (chapter 2), from descriptive and thematic analyses, indicated that the top three factors affecting decisions to seek postpartum care, ranked by the number of studies mentioning these factors, were the view that postpartum care is not necessary or needed, lack of support or encouragement from husbands/family members, and economic reasons. The top two factors affecting women's ability to reach a health facility were lack of money for transport and distance to the health facility, while the top two factors affecting women's ability to receive adequate care at the health facility were negative attitude of staff, and lack of drugs and equipment. From bivariate analyses, top five

determinants of postpartum care use, ranked by the number of studies mentioning these factors, were 1) awareness about complications/concerned about complications; 2) women's education; 3) women's occupation; 4) husband's education; and 5) husband's occupation.

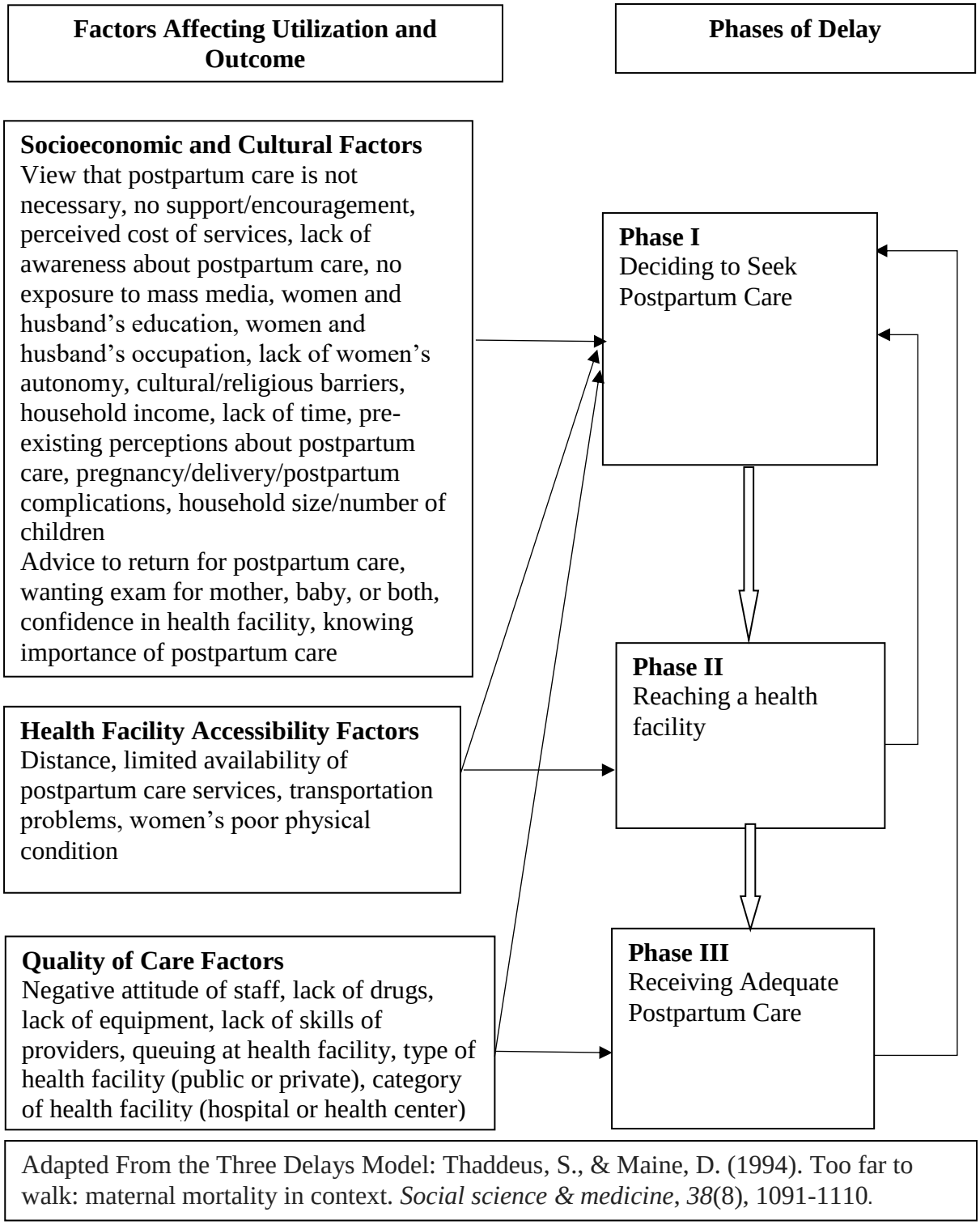


Figure 5.1. *Three Delays to Postpartum Care in Developing Countries*

From chapter 3, we found that many women reported receiving only partial postpartum clinical assessments of blood pressure (44%); temperature (41%); abdominal exam (50%); vaginal exam/bleeding (46%); breast exam/soreness (34%); and baby exam (77%). Eleven percent of women did not receive any postpartum assessments before discharge. Despite these inadequate assessments received, about 77% of women believed the midwife paid close attention to them throughout their stay in the postpartum ward, and more than half of women said midwives were very kind to them and that they were satisfied with the postpartum care they received in the health facility. Many women also reported that midwives did not introduce themselves, ask if patients had questions, explain what they were doing before exams, or explain what to expect after delivery. The top three reasons for participants' decisions to return for one-week postpartum care visits were being advised to return for care, wanted the mother to be examined, and wanted the baby to be examined. Participants stated not perceiving a need for care (feels fine), not being advised to return for care, and prior negative experiences, may potentially prevent them from returning for postpartum care visits in a health facility.

The findings from chapter 4 indicated that many husbands did not know about postpartum assessments (blood pressure, temperature, abdominal, vaginal, breast, baby exams) and education (advice on caring for baby, family planning, breastfeeding) their wives received from midwives prior to discharge. Percent agreement between dyads' responses was lower on questions on assessments than on education. The odds of saying "yes" that the woman received each of the postpartum assessments was greater among husbands than among wives, with odds ratios ranging from 4.75 to 23.22. Fifty-nine percent of husbands reported they did not go with their wives for one-week postpartum visits, with the top three reasons being at work or doing other work, out of town, and did not see the need.

The results of this dissertation have several implications for research, practice, and policy. Both community-based interventions and health facility interventions could be designed to improve postpartum care in rural communities. Community-based interventions could include health education programs to decrease phase I delays, and community based funds to decrease phase II delays. Health facility interventions could include training of midwives on postpartum care to decrease phase III delays, and establishing postpartum waiting homes to decrease phase II delays.

Health education and sensitization campaigns are needed to create community awareness on the importance of postpartum care. These interventions could focus on the importance of adhering to midwife recommendations/advice, husbands supporting their wives' to seek care for the wellbeing of the wife, and the importance of returning for care even when the wife feels fine. Women should also be encouraged to have open discussions with their husbands about the care they received in health facilities, and any health issues or concerns from visits. Further, a postpartum care educational module could be designed for women, their husbands and other family members, focusing on postpartum self-care, early recognition of postpartum complications, and seeking timely emergency postpartum care. Given that shortages of staff in health facilities are a barrier to properly educating patients, men and women's groups could be formed for educational interventions in rural areas. The postpartum care educational module described above could be implemented in such groups. Women's groups are community based interventions in which women form groups to discuss maternal health issues affecting them through regular meetings (Zamawe & Mandiwa, 2016). These types of interventions have been found to decrease maternal mortality rates in resource limited settings (Zamawe & Mandiwa, 2016).

Health facilities must improve on the adequacy of postpartum clinical assessments provided to women after delivery prior to discharge. Given that many midwives in health

centers are trained at the diploma level (Nurse Midwife Technicians), it is possible that midwives may not be well prepared in postpartum care. Refresher in-service trainings on postpartum care, implemented by the District Health Office, are recommended for midwives to encourage them to perform the recommended postpartum assessments. Also, a postpartum care assessment checklist could be developed for use by midwives in health facilities for each patient before discharge. This checklist could also remind midwives to advise patients to return for their postpartum care visits. Health facility policies would be needed to require midwives to attend the trainings and use the postpartum assessment checklist. A simple, take home educational brochure could also be designed and given to patients during discharge. This brochure could contain important information on warning signs of common postpartum complications and when to seek emergency postpartum care. We also recommend that midwives should be educated to welcome husbands as partners in their wives' care, by either allowing them into private examination rooms or providing them with information on the status of their wives' health. Further, policy changes are recommended to require that health facilities have the minimum level of drugs needed to manage the most common postpartum complications, such as pitocin for hemorrhage and antibiotics for infection.

The results of this dissertation have shown that distance to health facilities is a critical barrier to rural women in seeking postpartum care. The effect of distance on seeking postpartum care is even greater when combined with lack of transportation. These phase II delays could be addressed with the establishment of postpartum waiting homes. These homes would be similar to maternity waiting homes, only that they would be made available for postpartum women who live very far from the health facility, to stay for a minimum of 48 hours up to a week, have their postpartum checkup, and then go home. Maternity waiting homes are temporary shelters for pregnant women located near a hospital or health center (Lori, Wadsworth, Munro, & Rominski, 2013). Maternity waiting homes have been shown to

improve outcomes in Peru (UNICEF, 2009). Also, a study conducted in Liberia showed that maternity waiting homes increased the use of skilled birth attendants post intervention, and decreased maternal death rates (Lori et al., 2013).

The results of this dissertation highlighted that husbands are interested in their wives' wellbeing, despite the fact that many do not accompany their wives for postpartum visits. Further research is recommended on how husband's improved knowledge about their wives' postpartum care may increase prompt access to care, resulting in decreased postpartum morbidity and mortality. Further research is also recommended to establish significant delays in receiving adequate care in health facilities (health facility factors). Finally, there is a need for interventions that target illiterate men and women, women in agriculture, farmers and wives of farmers, because these populations had lower levels of postpartum care utilization.

This dissertation is not without limitations. Since data on postpartum assessments and education received were self-reported with no identifying information collected, we could not verify whether the women were actually assessed or not in the health facilities. We recommend that future studies include chart-reviews, in addition to self-reported data. Self-reported data can also lead to social bias in responses and may not reflect the true opinions of participants. We minimized this limitation by using interviewers, who were not only skilled data collectors and fluent in the local language, but were people the participants were likely to discuss issues with freely, because they had worked with the participants on several other studies and built a trusting relationship. Another limitation is that participants for the study were obtained by convenience sampling, thus, limiting the generalizability of the results. Probability sampling would allow for greater generalizability. Despite these limitations, this research highlights issues related to the quality of postpartum care, as well as gives insights on reasons for seeking care among rural farmers, and husbands' involvement in postpartum care among rural farmers in central Malawi.

APPENDICES

Appendix A: Postpartum Interview (PPC) Female Version

MSU CON-Adams-PPC

Data entry sequence number: ____ Data entry initials: ____

POSTPARTUM INTERVIEW (PPC)

Dyad #: ____ Male/female: ____ Site Name: ____

Date today: ____

INTRODUCTION AND CONSENT

Hello. My name is _____and I am a PhD student at Michigan State University working in collaboration with the Kamuzu College of Nursing.

READ CONSENT STATEMENT

Signature of interviewee: Date:

May I begin the interview now?

1

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC0	Have you had at least one live birth in the last one year? *If no, thank the participant and close the interview. Explain that we are interested in talking to people who had babies in the past one year.*	0 No 1 Yes
PPC1	How long was your stay in health facility after giving birth to your baby?	1 Less than 24 hours/same day 2 1 day 3 2 days 4 3 days 5 4 days or more 6 Delivered at Home
PPC2	Did you have any complications? *If No, go to PPC4*	0 No 1 Yes
PPC3	What Complications did you have?	1 Bleeding after giving birth (postpartum hemorrhage) 2 Infection (postpartum sepsis) 3 Obstructed labor and ruptured uterus 4 High blood pressure (Hypertensive disorder) 5 Anemia 6 Other (specify): ___ 7 Do not know
PPC4	In your opinion, what are the main purposes of coming back to health facility for postpartum care? *tick all that apply.*	1 For a check-up to make sure baby is well 2 For a check-up to make sure mother is well 3 Get immunizations for baby 4 Get advice on care of baby 5 Get family planning 6 For treatment for problem/illness (mother) 7 For treatment for problem/illness (infant) 8 Other (specify): _____ 9 Do not know
PPC5	In your opinion, what are the reasons why women do not come back to health facility for a postpartum check-up? *Tick all that apply.*	1 Cost of services/lack of funds 2 Long distances 3 Lack of transport 4 Lack of time/opportunity costs 5 Lack of confidence/trust in health providers (expectations of poor treatment) 6 Lack of support from partner/other household decision-makers 7 Other (specify): _____ 8 Do not know
PPC6	How was your baby born?	1 Vaginal Delivery 2 Cesarean Section
PPC7	At this birth, who helped you at the moment that the baby was born? *Tick one best response.*	1 Physician/Doctor 2 Midwife or Nurse 3 Ward or Patient Attendant 4 Family Member 5 Medical Assistant 6 Other (specify): _____
PPC8	Did you have to pay for your stay? If yes, how much did you pay, including all fees, drugs and supplies? *Enter amount (or value of in-kind payments) in local currency.*	0 No 1 Yes, Amount: _____

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC9	Did midwives/nurses/trained staff introduce themselves when you came to the ward/room after delivery?	0 No 1 Yes 2 Don't know/remember
PPC10	Did midwives/nurses/trained staff ask you if you had any questions or concerns?	0 No 1 Yes 2 Don't know/remember
PPC11	When midwives/nurses/trained staff examined you, did they provide privacy? *If YES*: What was used to provide privacy?	0 No/nothing 1 Ward screen 2 Cloths/drapes to cover body 3 Other (specify): _____
PPC12	Did midwives/nurses/trained staff explain what they were doing before examining you or conducting any procedure?	0 No 1 Yes 2 Don't know/remember
PPC13	Did midwives/nurses/trained staff explain what you should expect for normal after delivery recovery?	0 No 1 Yes 2 Don't know/remember
PPC14	When you were in pain, did midwives/nurses/trained staff provide medication or advise you on what you could do to make yourself more comfortable?	0 No 1 Yes 2 Don't know/remember
PPC15	Overall, on a scale of 1 to 5, how would you rate the midwives/nurses/trained staff kindness in the way they spoke to you during your stay? *(1= harsh/unkind; 5 = very kind)*	1 2 3 4 5
PPC16	On a scale of 1 to 5, how would you rate your overall satisfaction with the care you received during your stay? *(1= very unsatisfied; 5 = very satisfied)*	1 2 3 4 5
PPC17	Did you feel that staff paid close attention to you throughout your stay?	0 No 1 Yes 2 Don't know/remember
PPC18	If you called for help, did midwives/nurses/trained staff come to attend to you? *Tick the best response.*	0 No, they did not come 1 Yes 2 Did not call for help 3 Don't know/remember
PPC19	Were you advised to come back to health facility for a postpartum check-up?	0 No 1 Yes
PPC20	When were you advised to come back for a postpartum check-up?	0 Never/do not ask 1 During first week 2 During first six weeks 3 Only if she is ill/in case of problem 4 Other (specify): _____
PPC21	a. Did you go back to health facility for a postpartum check-up? b. If Yes, did your husband go with you?	0 No 1 Yes 2 Do not know 3 Other _____ 0 No 1 Yes

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

I would now like to know more about the services that you received after giving birth during your stay. Did the midwives/nurses/trained staff… *Ask about each service separately.*		
PPC22	… Measure your blood pressure	0 No 1 Yes
PPC23	… Measure your temperature	0 No 1 Yes
PPC24	…Perform an abdominal examination	0 No 1 Yes
PPC25	… Perform a vaginal or pad examination/check your bleeding	0 No 1 Yes
PPC26	… Examine your breast/ask about soreness	0 No 1 Yes
PPC27	…Examine the baby	0 No 1 Yes
PPC28	… Give you advice and information on how to care for baby	0 No 1 Yes
PPC29	… Discuss family planning/contraception	0 No 1 Yes
PPC30	… Discuss breast-feeding	0 No 1 Yes
PPC31	Did you ask any questions during your stay? *If No, probe to find out why client did not ask any questions and then go to question PPC33.* *Do not read list out. Tick one best response.*	1 Yes 2 Did not have any questions 3 Did not feel comfortable to ask questions 4 Provider too busy/No time for questions 5 Other (specify) _____
PPC32	Did you understand the answers to your questions?	0 No 1 Yes 2 Did not receive answer(s) to my question(s)
PPC33	Would you return to that facility for maternal health services? Why not OR why yes?	0 No 1 Yes 2 Do not know Reason:
PPC34	Did you go for care during your pregnancy (antenatal care)	0 No 1 Yes
PPC35	How many times did you go for care during your pregnancy (antenatal care)?	Number: ____
PPC36	What is your age?	Years: _____

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC37	How many years of school have you attended?	Years: _____
PPC38	What is your monthly household income? *Enter 0 if no income*	Income: _____
PPC39	a. What is your marital status? *If married or living together,* b. How long have you been married/living together	0 Not Married 1 Married 2 Living together Years:_____
PPC40	How many times have you been pregnant?	Number: _____
PPC41	How many children do you have?	Number: _____
PPC42	What is the distance from where you live to the health facility? (Distance in Kilometers)	Distance _____
PPC43	Why did you (would you) decide to seek care after giving birth (postnatal care of the mother)	
PPC44	Why did you (would you) decide NOT to seek care after giving birth (postnatal care of the mother)	
PPC 45	What mode of transportation did you use to get to the health center	1 Walked 2 Bicycle 3 Private Car 4. Public Transport 5. Other _____
PPC 46	What is the name of the health facility where you received care after giving birth	
	Exploratory Questions	
E1	Have you ever received postpartum care from a Traditional Birth Attendant	0 No 1 Yes
E2	If YES, Why did you decide to receive care from the TBA	

Do you have any suggestions for improving postpartum care services in health facilities?
Interviewer, use this space to record any comments or question(s) of the client.

Thank you for taking the time to speak to us today.

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Survey

Appendix B: Postpartum Interview (PPC) Male Version

MSU CON-Adams-PPC

Data entry sequence number: ____ Data entry initials: ____

POSTPARTUM INTERVIEW (PPC)
(Male Version)

Dyad #: ____ Male/female: ____ Site Name: ____

Date today: ____

INTRODUCTION ANDCONSENT

Hello. My name is _____and I am a PhD student at Michigan State University working in collaboration with the Kamuzu College of Nursing.

READ CONSENT STATEMENT

Signature of interviewee: Date:

May I begin the interview now?

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC0	Has your wife had at least one live birth in the last one year? *If no, thank the participant and close the interview. Explain that we are interested in talking to people who had babies in the past one year.*	0 No 1 Yes
PPC1	How long was your wife's stay in health facility after giving birth to your baby?	1 Less than 24 hours/same day 2 1 day 3 2 days 4 3 days 5 4 days or more 6 Delivered at home
PPC2	Did your wife have any complications? *If No, go to PPC4*	0 No 1 Yes
PPC3	What Complications did she have?	1 Bleeding after giving birth (postpartum hemorrhage) 2 Infection (postpartum sepsis) 3 Obstructed labor and ruptured uterus 4 High blood pressure (Hypertensive disorder) 5 Anemia 6 Other (specify): ___ 7 Do not know
PPC4	In your opinion, what are the main purposes of coming back to health facility for postpartum care? *tick all that apply.*	1 For a check-up to make sure baby is well 2 For a check-up to make sure mother is well 3 Get immunizations for baby 4 Get advice on care of baby 5 Get family planning 6 For treatment for problem/illness (mother) 7 For treatment for problem/illness (infant) 8 Other (specify): _____ 9 Do not know
PPC5	In your opinion, what are the reasons why women do not come back to health facility for a postpartum check-up? *Tick all that apply.*	1 Cost of services/lack of funds 2 Long distances 3 Lack of transport 4 Lack of time/opportunity costs 5 Lack of confidence/trust in health providers (expectations of poor treatment) 6 Lack of support from partner/other household decision-makers 7 Other (specify): _____ 8 Do not know
PPC6	How was your baby born?	1 Vaginal Delivery 2 Cesarean Section 3 Do not know
PPC7	At this birth, who helped your wife at the moment that the baby was born? *Tick one best response.*	1 Physician/Doctor 2 Midwife or Nurse 3 Ward or Patient Attendant 4 Family Member 5 Medical Assistant 6 Other (specify): _____
PPC8	Did you and/or your wife have to pay for her stay? If yes, how much did you pay, including all fees, drugs and supplies? *Enter amount (or value of in-kindpayments) in local currency.*	0 No 1 Yes, Amount: _____

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC9	Did midwives/nurses/trained staff introduce themselves when you or wife came to the ward/room after delivery?	0 No 1 Yes 2 Don't know/remember
PPC10	Did midwives/nurses/trained staff ask you or wife if you had any questions or concerns?	0 No 1 Yes 2 Don't know/remember
PPC11	When midwives/nurses/trained staff examined your wife, did they provide privacy? *If YES:* What was used to provide privacy?	0 No/nothing 1 Ward screen 2 Cloths/drapes to cover body 3 Other (specify): _____ 4 Don't know/remember
PPC12	Did midwives/nurses/trained staff explain what they were doing before examining your wife or conducting any procedure?	0 No 1 Yes 2 Don't know/remember
PPC13	Did midwives/nurses/trained staff explain what your wife should expect for normal after delivery recovery?	0 No 1 Yes 2 Don't know/remember
PPC14	When your wife was in pain, did midwives/nurses/trained staff provide medication or advise you or her on what you could do to make her more comfortable?	0 No 1 Yes 2 Don't know/remember
PPC15	Overall, on a scale of 1 to 5, how would you rate the midwives/nurses/trained staff kindness in the way they spoke to you or your wife during your stay? *(1= harsh/unkind; 5 = very kind)*	1 2 3 4 5
PPC16	On a scale of 1 to 5, how would you rate your overall satisfaction with the care your wife received during your stay? *(1= very unsatisfied; 5 = very satisfied)*	1 2 3 4 5
PPC17	Did you feel that midwives/nurses/trained staff paid close attention to your wife throughout your stay?	0 No 1 Yes 2 Don't know/remember
PPC18	If you or wife called for help, did midwives/nurses/trained staff come to attend to you? *Tick the best response.*	0 No, they did not come 1 Yes 2 Did not call for help 3 Don't know/remember
PPC19	Was your wife advised to come back to health facility for a postpartum check-up?	0 No 1 Yes 2 Don't know/remember
PPC20	When was she advised to come back for a postpartum check-up?	0 Never/do not ask 1 During first week 2 During first six weeks 3 Only if she is ill/in case of problem 4 Other (specify): _____ 5 Don't know/remember
PPC21	a. Did she go back to health facility for a postpartum check-up? b. If Yes, did you go with her? c. If no, why did you not go with her?	0 No 1 Yes 2 Do not know 3 Other _____ 0 No 1 Yes Reason _____

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

I would now like to know more about the services that your wife received after giving birth during your stay. Did the midwives/nurses/trained staff…

Ask about each service separately.

PPC22	… Measure her blood pressure	0 No 1 Yes 2 Do not know
PPC23	… Measure her temperature	0 No 1 Yes 2 Do not know
PPC24	…Perform an abdominal examination	0 No 1 Yes 2 Do not know
PPC25	… Perform a vaginal or pad examination/check her bleeding	0 No 1 Yes 2 Do not know
PPC26	… Examine her breast/ask about soreness	0 No 1 Yes 2 Do not know
PPC27	…Examine the baby	0 No 1 Yes 2 Do not know
PPC28	… Give her advice and information on how to care for baby	0 No 1 Yes 2 Do not know
PPC29	… Discuss family planning/contraception	0 No 1 Yes 2 Do not know
PPC30	… Discuss breast-feeding	0 No 1 Yes 3 Do not know

PPC31	Did your wife ask any questions during her stay? *If No, probe to find out why client did not ask any questions and then go to question PPC33.* *Do not read list out. Tick one best response.*	1 Yes 2 Did not have any questions 3 Did not feel comfortable to ask questions 4 Provider too busy/No time for questions 5 Other (specify) _____ 6 Don't know/remember
PPC32	Did your wife understand the answers to her questions?	0 No 1 Yes 2 Did not receive answer(s) to her question(s) 3 Don't know/remember
PPC33	Would you want your wife to return to that facility for maternal health services? Why not OR why yes?	0 No 1 Yes 2 Do not know Reason:
PPC34	Did your wife go for care during her pregnancy (antenatal care)?	0 No 1 Yes
PPC35	How many times did she go for care during her pregnancy (antenatal care)?	Number: ____ *Enter 0 if do not remember/know*

4

Adapted from World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

PPC36	What is your age?	Years: _____
PPC37	How many years of school have you attended?	Years: _____
PPC38	What is your monthly household income? *Enter 0 if no income*	Income: _____
PPC39	a. What is your marital status? *If married or living together,* b. How long have you been married/living together	0 Not Married 1 Married 2 Living together Years: _____
PPC40	How many times has your wife been pregnant?	Number: _____
PPC41	How many children do you have?	Number: _____
PPC42	What is the distance from where you live to the health facility? (Distance in Kilometers)	Distance _____
PPC43	Why did you (would you) decide to let your wife seek care after giving birth (postnatal care for the mother)	
PPC44	Why did you (would you) decide NOT to let your wife seek care after giving birth (postnatal care for the mother)	
PPC45	What mode of transportation did your wife use to get to the health center?	1 Walked 2 Bicycle 3 Private Car 4. Public Transport 5. Other _____
PPC46	What is the name of the health facility where your wife received care after giving birth	
	Exploratory	
E1	Has your wife ever received postpartum care from a Traditional Birth Attendant?	0 No 1 Yes 3 Don't know/remember
E2	If YES, Why did she decide to receive care from the TBA	

Do you have any suggestions for improving postpartum care services in health facilities?
Interviewer, use this space to record any comments or question(s) of the client.

Thank you for taking the time to speak to us today.

5

Adapted from the World Health Organization Safe Motherhood Needs Assessment Surveys and Family Care International Surveys

Appendix C: Copyright Agreement

JOHN WILEY AND SONS LICENSE
TERMS AND CONDITIONS

Nov 07, 2016

This Agreement between Yenupini J Adams ("You") and John Wiley and Sons ("John Wiley and Sons") consists of your license details and the terms and conditions provided by John Wiley and Sons and Copyright Clearance Center.

License Number	3983781189236
License date	Nov 07, 2016
Licensed Content Publisher	John Wiley and Sons
Licensed Content Publication	Journal of Nursing Scholarship
Licensed Content Title	Use and Evaluation of Postpartum Care Services in Rural Malawi
Licensed Content Author	Yenupini Joyce Adams, Manfred Stommel, Adejoke Ayoola, Mildred Horodynski, Address Malata, Barbara Smith
Licensed Content Date	Oct 25, 2016
Licensed Content Pages	1
Type of use	Dissertation/Thesis
Requestor type	Author of this Wiley article
Format	Electronic
Portion	Full article
Will you be translating?	No
Title of your thesis / Dissertation	USE OF POSTPARTUM CARE SERVICES IN RURAL CENTRAL MALAWI
Expected completion date	Dec 2016
Expected size (number of pages)	120
Requestor Location	Yenupini J Adams 2542 Avery Park Circle ATLANTA, GA 30360 United States Attn: Yenupini J Adams
Publisher Tax ID	EU826007151
Billing Type	Invoice
Billing Address	Yenupini J Adams 2542 Avery Park Circle ATLANTA, GA 30360 United States Attn: Yenupini J Adams
Total	0.00 USD
Terms and Conditions	

TERMS AND CONDITIONS

This copyrighted material is owned by or exclusively licensed to John Wiley & Sons, Inc. or one of its group companies (each a"Wiley Company") or handled on behalf of a society with which a Wiley Company has exclusive publishing rights in relation to a particular work (collectively "WILEY"). By clicking "accept" in connection with completing this licensing transaction, you agree that the following terms and conditions apply to this transaction (along with the billing and payment terms and conditions established by the Copyright Clearance Center Inc., ("CCC's Billing and Payment terms and conditions"), at the time that you opened your RightsLink account (these are available at any time at http://myaccount.copyright.com).

Terms and Conditions

- The materials you have requested permission to reproduce or reuse (the "Wiley Materials") are protected by copyright.

- You are hereby granted a personal, nonexclusive, non-sub licensable (on a standalone basis), non-transferable, worldwide, limited license to reproduce the Wiley Materials for the purpose specified in the licensing process. This license, and any CONTENT (PDF or image file) purchased as part of your order, is for a onetime use only and limited to any maximum distribution number specified in the license. The first instance of republication or reuse granted by this license must be completed within two years of the date of the grant of this license (although copies prepared before the end date may be distributed thereafter). The Wiley Materials shall not be used in any other manner or for any other purpose, beyond what is granted in the license. Permission is granted subject to an appropriate acknowledgement given to the author, title of the material/book/journal and the publisher. You shall also duplicate the copyright notice that appears in the Wiley publication in your use of the Wiley Material. Permission is also granted on the understanding that nowhere in the text is a previously published source acknowledged for all or part of this Wiley Material. Any third party content is expressly excluded from this permission.

- With respect to the Wiley Materials, all rights are reserved. Except as expressly granted by the terms of the license, no part of the Wiley Materials may be copied, modified, adapted (except for minor reformatting required by the new Publication), translated, reproduced, transferred or distributed, in any form or by any means, and no derivative works may be made based on the Wiley Materials without the prior permission of the respective copyright owner.For STM Signatory Publishers clearing permission under the terms of the STM Permissions Guidelines only, the terms of the license are extended to include subsequent editions and for editions in other languages, provided such editions are for the work as a whole in situ and does not involve the separate exploitation of the permitted figures or extracts, You may not alter, remove or suppress in any manner any copyright, trademark or other notices displayed by the Wiley Materials. You may not license, rent, sell, loan, lease, pledge, offer as security, transfer or assign the Wiley Materials on a standalone basis, or any of the rights granted to you hereunder to any other person.

- The Wiley Materials and all of the intellectual property rights therein shall at all times remain the exclusive property of John Wiley & Sons Inc, the Wiley Companies, or their respective licensors, and your interest therein is only that of having possession of and the right to reproduce the Wiley Materials pursuant to Section 2 herein during the continuance of this Agreement. You agree that you own no right, title or interest in or to the Wiley Materials or any of the intellectual property rights therein. You shall have no rights hereunder other than the license as provided for above in Section 2. No right, license or interest to any trademark, trade name, service mark or other branding ("Marks") of WILEY or its licensors is granted hereunder, and you agree that you shall not assert any such right, license or interest with respect thereto

- NEITHER WILEY NOR ITS LICENSORS MAKES ANY WARRANTY OR REPRESENTATION OF ANY KIND TO YOU OR ANY THIRD PARTY, EXPRESS, IMPLIED OR STATUTORY, WITH RESPECT TO THE MATERIALS OR THE ACCURACY OF ANY INFORMATION CONTAINED IN THE MATERIALS, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, ACCURACY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE, USABILITY, INTEGRATION OR NONINFRINGEMENT AND ALL SUCH WARRANTIES

ARE HEREBY EXCLUDED BY WILEY AND ITS LICENSORS AND WAIVED BY YOU.

- WILEY shall have the right to terminate this Agreement immediately upon breach of this Agreement by you.

- You shall indemnify, defend and hold harmless WILEY, its Licensors and their respective directors, officers, agents and employees, from and against any actual or threatened claims, demands, causes of action or proceedings arising from any breach of this Agreement by you.

- IN NO EVENT SHALL WILEY OR ITS LICENSORS BE LIABLE TO YOU OR ANY OTHER PARTY OR ANY OTHER PERSON OR ENTITY FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY OR PUNITIVE DAMAGES, HOWEVER CAUSED, ARISING OUT OF OR IN CONNECTION WITH THE DOWNLOADING, PROVISIONING, VIEWING OR USE OF THE MATERIALS REGARDLESS OF THE FORM OF ACTION, WHETHER FOR BREACH OF CONTRACT, BREACH OF WARRANTY, TORT, NEGLIGENCE, INFRINGEMENT OR OTHERWISE (INCLUDING, WITHOUT LIMITATION, DAMAGES BASED ON LOSS OF PROFITS, DATA, FILES, USE, BUSINESS OPPORTUNITY OR CLAIMS OF THIRD PARTIES), AND WHETHER OR NOT THE PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY PROVIDED HEREIN.

- Should any provision of this Agreement be held by a court of competent jurisdiction to be illegal, invalid, or unenforceable, that provision shall be deemed amended to achieve as nearly as possible the same economic effect as the original provision, and the legality, validity and enforceability of the remaining provisions of this Agreement shall not be affected or impaired thereby.

- The failure of either party to enforce any term or condition of this Agreement shall not constitute a waiver of either party's right to enforce each and every term and condition of this Agreement. No breach under this agreement shall be deemed waived or excused by either party unless such waiver or consent is in writing signed by the party granting such waiver or consent. The waiver by or consent of a party to a breach of any provision of this Agreement shall not operate or be construed as a waiver of or consent to any other or subsequent breach by such other party.

- This Agreement may not be assigned (including by operation of law or otherwise) by you without WILEY's prior written consent.

- Any fee required for this permission shall be nonrefundable after thirty (30) days from receipt by the CCC.

- These terms and conditions together with CCC's Billing and Payment terms and conditions (which are incorporated herein) form the entire agreement between you and WILEY concerning this licensing transaction and (in the absence of fraud) supersedes all prior agreements and representations of the parties, oral or written. This

Agreement may not be amended except in writing signed by both parties. This Agreement shall be binding upon and inure to the benefit of the parties' successors, legal representatives, and authorized assigns.

- In the event of any conflict between your obligations established by these terms and conditions and those established by CCC's Billing and Payment terms and conditions, these terms and conditions shall prevail.

- WILEY expressly reserves all rights not specifically granted in the combination of (i) the license details provided by you and accepted in the course of this licensing transaction, (ii) these terms and conditions and (iii) CCC's Billing and Payment terms and conditions.

- This Agreement will be void if the Type of Use, Format, Circulation, or Requestor Type was misrepresented during the licensing process.

- This Agreement shall be governed by and construed in accordance with the laws of the State of New York, USA, without regards to such state's conflict of law rules. Any legal action, suit or proceeding arising out of or relating to these Terms and Conditions or the breach thereof shall be instituted in a court of competent jurisdiction in New York County in the State of New York in the United States of America and each party hereby consents and submits to the personal jurisdiction of such court, waives any objection to venue in such court and consents to service of process by registered or certified mail, return receipt requested, at the last known address of such party.

WILEY OPEN ACCESS TERMS AND CONDITIONS

Wiley Publishes Open Access Articles in fully Open Access Journals and in Subscription journals offering Online Open. Although most of the fully Open Access journals publish open access articles under the terms of the Creative Commons Attribution (CC BY) License only, the subscription journals and a few of the Open Access Journals offer a choice of Creative Commons Licenses. The license type is clearly identified on the article.

The Creative Commons Attribution License

The Creative Commons Attribution License (CCBY) allows users to copy, distribute and transmit an article, adapt the article and make commercial use of the article. The CCBY license permits commercial and non-

Creative Commons Attribution Non-Commercial License

The Creative Commons Attribution NonCommercial (CCBYNC) License permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.(see below)

Creative Commons Attribution-Non-Commercial-NoDerivs License

The Creative Commons Attribution NonCommercialNoDerivs License (CCBYNCND) permits use, distribution and reproduction in any medium, provided the original work is properly cited, is not used for commercial purposes and no modifications or adaptations are made. (see below)

Use by commercial "forprofit" organizations

Use of Wiley Open Access articles for commercial, promotional, or marketing purposes requires further explicit permission from Wiley and will be subject to a fee.

Further details can be found on Wiley Online Library
http://olabout.wiley.com/WileyCDA/Section/id410895.html

Other Terms and Conditions:

v1.10 Last updated September 2015
Questions? customercare@copyright.com or +18552393415 (toll free in the US) or +19786462777.

REFERENCES

REFERENCES

Lori, J. R., Wadsworth, A. C., Munro, M. L., & Rominski, S. (2013). Promoting access: The use of maternity waiting homes to achieve safe motherhood. *Midwifery*, 29(10), 1095–1102.

UNICEF (2009). *Mamawasis (waiting houses) for safe motherhood in rural Peru*. Retrieved from http://www.unicef.org/devpro/46000_46822.html

Zamawe, C. O., & Mandiwa, C. (2016). Understanding the mechanisms through which women's group community participatory intervention improved maternal health outcomes in rural Malawi: Was the use of contraceptives the pathway?. *Global Health Action*. doi: 10.3402/gha.v9.30496