

Safe motherhood

Citation for published version (APA):

Sialubanje, C. (2016). *Safe motherhood: determinants of the utilization of maternal healthcare services in rural Zambia*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20160913cs>

Document status and date:

Published: 01/01/2016

DOI:

[10.26481/dis.20160913cs](https://doi.org/10.26481/dis.20160913cs)

Document Version:

Publisher's PDF, also known as Version of record

Document license:

Unspecified

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Safe motherhood

**Determinants of the utilization of
maternal healthcare services in
rural Zambia**

Cephas Sialubanje

The research reported in this dissertation was a cooperation between the
Zambia Ministry of Health



and Maastricht University



The project was funded by the Netherlands Organization for International Cooperation in
Higher Education (NUFFIC)



Grant number NFP-PhD.12/367



ISBN: 978-94-028-0295-5

Layout & design: Legatron Electronic Publishing, Rotterdam, the Netherlands

Printing: Ipskamp Printing, Enschede, the Netherlands

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Safe motherhood

Determinants of the utilization of maternal healthcare services in rural Zambia

DISSERTATION

to obtain the degree of Doctor at Maastricht University,
on the authority of the
Rector Magnificus Prof. dr. Rianne M. Letschert,
in accordance with the decision of the Board of Deans,
to be defended in public on Tuesday 13th of September 2016,
at 9.30 hours

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Chapter 1

General Introduction

Kalomo District, Zambia

The research reported in this dissertation was conducted in Kalomo district, a rural district in Southern Province, Zambia. The country is a sub-Saharan African country located in Southern Africa, covering an area of 752, 612 km². It lies between latitude 8° and 18° south, and longitude 20° and 35° east. The country has a tropical climate with three seasons: cool dry winter (May to July), hot dry season (August to October) and rainy hot season (November to April). The annual rainfall varies from 600 mm to 1100 mm with periodic dry spells in the south and river valleys. The average temperatures range between 21°C and 32°C during the hot season and 13°C and 21°C during the cold season. The country is administratively divided into 10 provinces and 105 districts. It has an estimated population of 14 million, with an annual growth rate of 3% (CSO, 2014). Most of the population lives in rural areas, with 38% living in urban areas; the population density is 17 per km² (CSO, 2014). The country has a total fertility rate of 5.9 (CSO, 2014). Zambia is a low middle income country with a gross domestic product (GDP) of \$27.07 billion and a GDP per capita of \$1,721.6 million (CSO, 2016).

Kalomo district is located 360km south of the capital Lusaka, and covers a total surface area of 15 000 km². It has an estimated population of 275, 779 (CSO, 2010) with an annual growth rate of 4.4%. Despite subsistence farming and cattle rearing being major economic activities, the district is one of the poorest in the country, with more than 70% of its population living on less than a dollar per day (CSO, 2007). Administratively, the district is divided into three constituencies, four chiefdoms and twenty political wards. The health system in the district comprises two hospitals, thirty-four health centres and several health posts.

The aim of the research reported in this dissertation was to explore the psychosocial and environmental factors that influence maternal healthcare seeking behavior in a rural area of Zambia, Kalomo. The knowledge gained from these studies can serve as a basis for the design of future public health interventions that will focus on improving utilization of maternal healthcare services in rural Zambia. The current chapter provides a brief overview of global maternal mortality and highlights maternal mortality in Zambia. The chapter also describes the organization and financing of health services in Zambia and describes the provision and utilization of maternal health services in Zambia. Moreover, the chapter presents an overview of the determinants of maternal healthcare service utilization as reported in the existing literature, and describes strategies to improve Maternal Healthcare Services and their effectiveness. Finally, the chapter describes the objectives of the current research, highlights the theoretical framework used in the research and presents an outline of the current research.

Global maternal mortality

Over the past few decades, maternal health – the health of a woman during pregnancy, childbirth and the postpartum period (WHO, 2005, 2007, 2014a, 2016a) – has become an important global public health issue. Specially, the launch of the Safe Motherhood Initiative in Nairobi in 1987 by the World Bank, in collaboration with WHO and UNFPA made maternal health gain global attention as a public health issue (WHO, 2007). During its Millennium Summit of 2000, the United Nations included maternal health as one of the eight Millennium Development Goals (MDGs) which were established to address socio-economic and health-related inequalities around the world (UN, 2013). Specifically, the fifth MDG focused on improving maternal health, improving access to reproductive health and reducing the global maternal mortality ratio (MMR) by 75% by the year 2015 (UN, 2013; WHO, 2007). Over the past 20 years, progress has been made towards improving maternal health, showing a 45% decline in the global MMR from 380 maternal deaths per 100 000 live births in 1990 to 210 in 2013 (WHO, 2010, 2014a, 2014b, 2014c). Thus, the UNFPA safe motherhood slogan which states that “[...] no woman should die while giving birth and that motherhood should be a positive and fulfilling experience for the woman and her family” (UNFPA, 2013; WHO, 2015a, 2015c) is slowly but steadily being reached.

Despite these positive developments, for many women, motherhood and childbirth are still associated with suffering, ill-health and even death (WHO, 2015a, 2015b, 2015c, 2016b). 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” (WHO, 2016b). Globally, approximately 830 women die every day as a result of preventable pregnancy and labour related complications, totalling more than half a million women and at least 3.2 million babies each year (WHO, 2007, 2014b, 2016b). Moreover, almost all maternal deaths (99%) occur in developing countries, with the sub-Saharan African region alone accounting for more than half (62%) of total global maternal deaths (WHO, 2014b).

In this region, complications during pregnancy and childbirth are the leading causes of death for women of childbearing age, and women’s lifetime risk of maternal death is 1 in 38 (WHO, 2014b, 2015b; UNFPA, 2010). Most maternal deaths are due to direct causes such as haemorrhage, sepsis, unsafe abortions, hypertensive disorders, and obstructed labour. Further, more than half of these maternal deaths (50-71%) occur during the postpartum period and 11-17% occur during childbirth itself. Women living in rural areas and adolescents are at highest risk for complications and death (WHO, 2014b, 2015b; UNFPA, 2010; Say *et al.*, 2014). Sadly, most of these deaths are largely preventable if adequate care, supplies, and medicines are available (WHO, 2015b; UNFPA, 2010; Say *et al.*, 2014).

Maternal mortality in Zambia

Zambia is one of several sub-Saharan African countries with the highest rates of unfavourable maternal health outcomes (WHO, 2014b, 2015d, 2016b). The latest 2014 Zambia Demographic and Health Survey (DHS) (CSO, 2014) found that the country has a maternal mortality ratio (MMR) of 398 deaths per 100 000 live births. Moreover, maternal deaths account for 10 percent of all deaths among women of reproductive age (15 to 49 years). In addition, the percentage of maternal deaths was relatively higher among women aged between 20 and 24 years and those aged between 30 and 34 years than in the other age groups (CSO, 2014). Similar to other developing countries, most maternal deaths in Zambia are due to direct causes such as haemorrhage, sepsis, complications from unsafe abortions, hypertensive disorders, and obstructed labour (CSO, 2014; MOH, 2013). Further, maternal deaths are caused by indirect causes such as malaria, diabetes mellitus, anaemia, and HIV (MOH, 2013). Most of these deaths are preventable through optimal utilization of maternal healthcare services – including early and focused antenatal care, skilled attendance at birth, emergency obstetric care when needed, and postnatal care (UNFPA, 2010; CSO, 2014, 2015; Population Reference Bureau, 2003).

Organization and financing of health services in Zambia

The health services in Zambia are overseen by the Ministry of Health which operates through a decentralised healthcare system that was brought into play by the National Health Services Act of 1995, but which was repealed in 2005 (World Bank, 2002; Zambia Legal Information Institute, 2016). Some of the management and fiscal responsibilities were assigned to the Provincial and District Medical Offices. The District Medical Offices, the Provincial Medical Offices and the Ministry Headquarters provide oversight of all the health services at the district, provincial and national levels, respectively. The health service delivery and patient referral systems follow this same hierarchy and comprise the health posts and health centres at the community level, district hospitals at the district level, provincial or general hospitals at the provincial level, and the tertiary hospitals at the national level. The health system is financed through direct government funding which comes from the national treasury under the Ministry of Finance and National Planning. The Ministry of Health does not operate a national social insurance system. Rather, the main sources of revenue for the treasury are taxes and grants, and financial support from bilateral and multilateral cooperating partners.

Provision and utilization of maternal health services in Zambia

Improving maternal and newborn health outcomes is one of the main priorities for the Zambian Ministry of Health (MOH, 2011). Maternal healthcare services in the country are provided by the Ministry of Health, Ministry of Defence, Ministry of Home Affairs, the Churches Health Association of Zambia, and the private sector. In addition, various international agencies play an important role in the provision of healthcare services in the country (e.g. USAID). Further, several non-governmental organizations, community leaders and various community-based health agents, including traditional birth attendants (TBAs), community health workers (CHWs), neighbourhood health committee (NHC) members, and the SMAGs play an important role in the provision of health promotion activities such as providing knowledge, and creating awareness about maternal healthcare services in the communities.

Maternal healthcare services in Zambia are provided in public and private healthcare facilities. Healthcare services are provided for free in line with the repealed national health services act of 2005 which removed user fees in all primary healthcare facilities (Zambia legal information Institute, 2016). National maternal health service guidelines recommend that pregnant women go for antenatal care (ANC) visits at the health facility as soon as they realize they are pregnant and that they have at least four ANC visits. Regular ANC is helpful to identify and prevent adverse pregnancy outcomes when it is sought early in pregnancy and is continued through delivery (MOH, 2011). The recommended ANC visit schedule prescribes that the first visit should occur by the end of 16 weeks of pregnancy, the second at 24 weeks, the third at 32 weeks, and the fourth at 36 weeks of pregnancy. However, women who experience discomfort, danger signs or have special needs or conditions beyond the scope of basic care may require additional visits (MOH, 2011). The national guidelines further recommend that all women give birth at a healthcare facility under the supervision of a skilled birth attendant such as a doctor, nurse, midwife, or a clinical officer, and that women return to the healthcare facility for postnatal care within the first six days after delivery (MOH, 2011).

Despite these national guidelines, the 2013-2014 DHS (CSO, 2014) shows that most women start going for their ANC visits late (at approximately 5 months) and that only 24% of pregnant women go for ANC visits during the first trimester. Moreover, 44% of them do not complete the required four-visit- ANC schedule (CSO, 2014; MOH, 2011). Further, currently, 67% of all deliveries in the country take place at a health facility (CSO, 2014). The other deliveries take place at home, often in the absence of a skilled birth attendant.

In addition, rural-urban disparities have been reported in the availability and utilization of maternal healthcare services in the country (CSO, 2014; MOH, 2011). For example, compared to only 56% of the rural women who gave birth at a health facility, the majority of women in urban areas gave birth at a health facility (CSO, 2014; MOH, 2011). Moreover, a skilled birth attendant attended 89% of the births in urban areas compared to only 52% of

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the births in rural areas (CSO, 2014). In addition, many women do not return for postnatal care during the recommended period (CSO, 2014).

Kalomo district – where the current study was conducted – is one of the rural districts with the lowest utilization rates of maternal healthcare services where more than 80% of the women start their ANC late, after the 20th week and only 7% of women start their ANC visits before the recommended 14th week of pregnancy. Moreover, more than 50% of women give birth at home.

Determinants of maternal healthcare service utilization

Research conducted in Zambia and other developing countries has yielded important insight into the factors affecting utilization of maternal healthcare services. Overall, one of the main reasons for the low utilization of maternal healthcare service is limited access due to long distances and high transportation costs to healthcare facilities in rural areas (CSO, 2014; Thaddeus & Maine, 1994; Mpembeni *et al.*, 2007; Stekelenburg *et al.*, 2004; Gabrysch & Campbell, 2009, 2011; Gabrysch *et al.*, 2011; Gage, 2007; Choulagai *et al.*, 2013). For example, in a study conducted in Zambia, Gabrysch *et al.* (2011) showed that one-third of the respondents lived more than 25 km from the nearest health facility, and that as the distance to the closest health facility doubled, the odds of facility delivery decreased by 29%. Similarly, the latest Zambia DHS (CSO, 2009, 2014) shows that 41% of the women who gave birth at home indicated that long distance and/or a lack of transportation were the main reasons for not giving birth at the health facility. In contrast, a study conducted in western Nepal showed that living within 30 minutes walking distance from a health facility was positively associated with increased use of both ANC and delivery services (Choulagai *et al.*, 2013).

Further, the perceived quality of care affects the utilization of maternal healthcare services, including negative staff attitudes towards pregnant women, lack of equipment, a shortage of qualified staff, and a lack of medication and supplies necessary for emergency obstetric care (Thaddeus & Maine, 1994; Stekelenburg *et al.*, 2004, 2005; Lubbock and Stephenson, 2008; Moyer & Mustafa, 2013). For example, Stekelenburg and colleagues (2005) showed that poorly staffed and ill-equipped health centres with poorly skilled personnel negatively affected utilization of maternal healthcare services in the western province of Zambia. In addition, Lubbock and Stephenson (2008) reported that women's past experiences with poor-quality healthcare, poor communication with health professionals, or unclear information in the health facilities influenced women's future likelihood to utilise these services. In addition, psychosocial factors – such as pregnant women's negative attitude towards maternal healthcare services provided at health facilities and a preference for TBAs – have been shown to influence pregnant women's decision to use maternal healthcare services (Titaley *et al.*, 2010; Hazemba and Siziya, 2008; Adewemimo *et al.*, 2014). For example, a study from Indonesia indicated that despite the availability of skilled

birth attendants, some pregnant women preferred delivering at home and being assisted by the TBAs whom they were more familiar with, trusted and lived with (Titaley *et al.*, 2010).

Further, studies have reported the influence of sociodemographic and economic factors such as the pregnant woman's age, her level of education, and the family's income on the decision to use maternal healthcare services (Mpembeni *et al.*, 2007; Ochako *et al.*, 2011; Babalola & Fatusi, 2009; Mrisho *et al.*, 2007; Izugbara & Ngilangwa, 2010; Jat *et al.*, 2011; Chakraborty *et al.*, 2003), such that women with a higher education, lower parity and those with a higher economic status were more likely to use maternal health services. Finally, there are normative influences regarding decision-making autonomy which have been reported to influence utilization of maternal healthcare services (Moyer *et al.*, 2014; Engmann *et al.*, 2013; Ohashi *et al.*, 2014; Bartholowe *et al.*, 2011; Eldredge *et al.*, 2016; Ensor *et al.*, 2014), such as peer practices (Engmann *et al.*, 2013) or the influence of the husband (Mpembeni *et al.*, 2007; Rosato *et al.*, 2008; Ensor *et al.*, 2014; Ohashi *et al.*, 2014).

Strategies to improve maternal healthcare services and their effectiveness

Over the past years, several efforts have been made in Zambia and other developing countries to improve utilization of maternal health services. For example, in 2003 the Zambian Ministry of Health established SMAGs (Ben *et al.*, 2014) which comprise community volunteers such as TBAs, CHWs, and NHC members who were already involved in maternal health services at the community level. The rationale for implementing a community programme was that community-based interventions have been shown to be more likely to be accepted by community members, and consequently, more likely to lead to desired health behavioral change than top-down implemented programmes (WHO, 2005). The aim of the SMAGs was to raise awareness about pregnancy and labour-related complications, and to reduce critical delays in decision-making at the household level about seeking life-saving maternal healthcare at health facilities (Ben *et al.*, 2014). In addition, the programme aimed to improve both an understanding of and access to maternal healthcare services, and to improve linkages between the community and the healthcare facility. This should enhance maternal and newborn care seeking, and increase women's utilization of maternal healthcare services in rural areas of the country (Ben *et al.*, 2014). The project was initially supported by the United Nations Population Fund (UNFPA) in Northern Province before it was adopted as a national programme by the Zambian Ministry of Health (MOH, 2008). In 2012, the Zambian Ministry of Health extended the SMAG programme to 17 other districts, including Kalomo, where the studies in this dissertation took place.

Moreover, since 2005 the Zambian government removed the user fees from all primary healthcare facilities in the country in order to increase access to healthcare services for vulnerable groups such as women and children in rural areas (World Bank, 2002; Zambia Legal Information Institute, 2016). Further, in 2008, the Zambian government revised its

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national reproductive health policy, and stopped the funding and training of TBAs in line with WHO recommendation that all women should use facility-based delivery services provided by trained and skilled birth attendants (African Union, 2010; WHO, 1996). Further, in 2010, the Zambian Ministry of Health launched the Campaign for Accelerated Reduction of Maternal Mortality in Zambia (CARMMAZ), which was adopted from the Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA) (African Union, 2010). The CARMMA is an African Union Commission (AUC) and UNFPA initiative whose aim is to intensify the reduction of maternal mortality in the African region (African Union, 2010). Both the change of the national reproductive health policy and the launch of CARMMAZ aimed to advocate facility delivery to reduce maternal and neonatal morbidity and mortality, and to encourage all women to give birth at a health facility under the supervision of a skilled birth attendant such as a nurse, midwife or a doctor (Ministry of Health, 2011; African Union, 2010; WHO, 1992, 2005).

Other efforts to increase utilization of maternal healthcare services include maternity waiting homes, which have been established in many developing countries, including Zambia. Here, women with high-risk pregnancies and those living far from health facilities can wait for their delivery, and be transferred to a nearby medical facility shortly before delivery, or earlier, should complications arise (WHO, 1996; Van Lonkhuijzen *et al.*, 2003). Further, to mitigate transport costs to the health centre for women living in rural areas, emergency community transport in the form of motorcycle ambulances has been made available to pregnant women in some developing countries, including Zambia (Ssebunya & Matovu, 2016; Ganaba *et al.*, 2016). In addition, in order to mitigate financial challenges that women face when intending to buy materials for the mother and the newborn baby that are required at the health facility in rural areas, the Zambian Ministry of Health recently piloted a project in two rural districts (that is Serenje and Lundazi) which provided non-monetary incentives comprising a mother and baby pack (Wang *et al.*, 2016).

Moreover, to improve the quality of care in healthcare facilities in rural areas, basic and comprehensive emergency obstetric and neonatal care (EmONC) services have been established in Zambia and in various countries such as Tanzania (MOH, 2011; Nyamtema *et al.*, 2016; Family Health International 360, 2011; SulliVan & Hirst, 2011), consisting of construction and equipping of maternity blocks, operating rooms, laboratories, staff houses and installation of solar panels, standby generators, and water supply systems. For example, the Saving Mothers Giving Life Project (SMGL) was piloted in Zambia to recruit midwives, train medical assistants, nurse-midwives and clinical officers in EmONC and anaesthesia and provided equipment in order to improve the quality of care in healthcare facilities in rural areas (Family health International 360, 2011). In addition, the Zambian Ministry of Health also launched the “direct entry” training for midwifery and extended the health worker retention scheme (HWRS) to midwives to improve retention of these essential health workers in the rural areas (MOH, 2011, 13; Gow *et al.*, 2013).

Despite these interventions, facility-based delivery rates in rural areas of Zambia remain low at 56% and most women do not have access to skilled birth attendants (CSO, 2014).

Further, the country still has one of the highest MMRs in the world (WHO; 2014b; CSO, 2014). A thorough understanding of the factors that affect utilization of maternal health services in Zambia is therefore needed. Thus, as summarised above, low utilization of maternal health services is a major public health problem leading to high maternal mortality in Zambia, its causes are largely unknown (Stekelenburg *et al.*, 2004, 2005; Gabrysch *et al.*, 2009, 2011), and evidence on its determinants is largely inconclusive (Thaddeus & Maine, 1994; Chakraborty *et al.*, 2003; Moyer CA *et al.*, 2014; WHO, 2005). The complexity of maternal health seeking behavior indicates a need for a systematic and theory-based approach to the analysis of the environmental and behavioral factors influencing this behavior (Chakraborty *et al.*, 2003; Bartholomew *et al.*, 2011). A systematic approach to the analysis of a health problem has been shown to lead to the design of interventions that are more likely to result in the desired health behavior change (Witte, 1995). A needs assessment of the health problem and its behavioral and environmental determinants is the first step in intervention planning and development (Bartholomew *et al.*, 2011).

Theoretical Framework

To structure and guide the present research, we used a logic model which was based on the PRECEDE part of the Green and Kreuter's PRECEDE/PROCEED model (Green & Kreuter, 2005), which stresses analysis of a health problem at multiple levels, including the epidemiological analysis of the health problem and the related quality of life. The model also allows consideration of health-related behavioral determinants and environmental conditions, including predisposing, reinforcing, and enabling factors (Green & Kreuter, 2005). Predisposing factors are antecedents to behavior that provide the motivation for the behavior and include knowledge, attitudes, beliefs, personal preferences, existing skills, and self-efficacy beliefs (Green & Kreuter, 2005; Glanz *et al.*, 2008). Reinforcing factors are those factors that follow a behavior that provides continuing reward or incentive for the persistence or repetition of the behavior such as social support, peer influence, significant others, and vicarious reinforcement (Green & Kreuter, 2005). Enabling factors are antecedents to behavioral or environmental change that allow a motivation or environmental policy to be realised. Here, one could think of programmes, services, and the resources necessary for behavioral and environmental outcomes to be realised, as well as the new skills needed to enable behavior change (Green & Kreuter, 2005).

Since the aim of this research was to explore the psychosocial and environmental factors that influence maternal healthcare seeking behavior, we also used socio-cognitive models including Fishbein and Ajzen's (2010) Reasoned Action Approach (RAA) and the Health Belief Model (Glanz *et al.*, 2008; Conner & Norman, 2005) to explore and analyse the health-related behavioral determinants and environmental conditions. Socio-cognitive models describe the most important proximal antecedents of behavior, which are modifiable variables that provide the basis for a health behavior change (Conner & Norman, 2005).

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Both the Reasoned Action Approach and the Health Belief Model have been widely applied in studies investigating a wide range of health behaviors, such as breast cancer screening (Conner & Norman, 2005; Cooke & French, 2008), breast-feeding among HIV positive mothers (Kafulafula *et al.*, 2012), and mothers' intention to vaccinate their newborn children against hepatitis B virus (Harmsen *et al.*, 2012). Previous research has shown that variables from these models explain a large proportion of the variance in behavioral intention, which, in turn, has been shown to predict health behavior (Conner & Norman, 2005; Kafulafula *et al.*, 2012; Cooke & French, 2008; Harmsen *et al.*, 2012).

Briefly, the Reasoned Action Approach (Fishbein & Ajzen, 2010; Conner & Norman, 2005; Glanz *et al.*, 2008) postulates that an individual's behavior is predicted by (behavioral) intention, which in turn, is predicted by attitude towards the behavior, subjective norms associated with the behaviour, and perceived behavioral control. Attitude is the individual's disposition or tendency to respond with some degree of favourableness or unfavourableness to psychological object or behavior. It is determined by the individual's salient behavioral beliefs multiplied by the outcome expectations of performing the behavior. Subjective norms are the individual's beliefs about whether significant others think he/she should engage in the behavior. They are determined by normative beliefs about whether important others approve or disapprove of the behavior, weighted by the person's motivation to comply with the referents' expectation. Perceived behavioral control is the extent to which people believe that they have control over its performance. It is determined by the individual's beliefs concerning the presence or absence of facilitators or barriers to behavioral performance, weighted by their perceived power or the impact of each control to facilitate or inhibit the behavior. Perceived behavioral control is synonymous with Bandura's (2000) concept of self-efficacy, which is concerned with the individual's beliefs in their capability or confidence to exercise control over challenging demands and their own functioning (Conner & Norman, 2005).

The Health Belief Model postulates that the odds of an individual taking action to engage in a healthy behavior depend on the perceived severity of a health threat, the individual's perceived susceptibility towards the threat, and the perceived benefits and barriers associated with one's engaging in the behavior (Conner & Norman, 2005; Glanz *et al.*, 2008). Other constructs related to the health belief model include cues to action, and self-efficacy (Conner & Norman, 2005; Glanz *et al.*, 2008). Cues to action are defined as triggers that can stimulate the individual to perform the health behavior (Conner & Norman, 2005; Glanz *et al.*, 2008).

Outline of the current research

The aim of this dissertation was to explore the psychosocial and environmental factors that influence maternal healthcare seeking behavior in a rural area of Zambia, Kalomo. We conducted both qualitative and quantitative studies descriptive in nature, to explore the dimensions of the behavioral problem under investigation, the manner in which this behavior is manifested, and the factors related to it (Alvarez *et al.*, 2009). Here, we briefly outline the content of the following chapters:

Chapter 2 reports on a qualitative study conducted among women of reproductive age, traditional leaders, CHWs, and nurse-midwives, to investigate the psychosocial and environmental factors that affect utilization of maternal healthcare services in Kalomo, Zambia. The chapter reports on twelve focus group discussions and 35 in-depth interviews conducted in six health centre catchment areas.

Chapter 3 consists of a quantitative study which aimed to identify important factors – psychosocial variables, logistical barriers, and sociodemographic variables – that influence women’s intention to use maternal health services in Kalomo, Zambia. An interviewer-administered questionnaire was used to collect data from 1007 women of reproductive age (15-45 years) from 13 rural health centres with the lowest service utilization rates in the district.

Chapter 4 focuses on the role of TBAs. It aims to identify the reasons motivating women to give birth at home and seek the help of these TBAs. Previous studies and surveys in Zambia show that despite the policy change which stopped TBAs from conducting deliveries at home, and which encouraged all women to give birth at the clinic under skilled care, many women still give birth at home and TBAs are essential providers of obstetric care in rural Zambia. Data for this study were obtained from ten focus group discussions with women of reproductive age in five health centre catchment areas with the lowest institutional delivery rates in the district. In addition, data were collected from 30 in-depth interviews comprising TBAs, headmen, husbands, mothers, NHC members, CHWs and nurses.

Chapter 5 reports on a qualitative study which explored women’s experiences and beliefs concerning the utilization of maternity waiting homes in rural Zambia. Previous research has shown the importance of maternity waiting homes in mitigating physical barriers such as long distances to healthcare facilities, and in improving access to facility-based delivery services. However, studies have also indicated that even if they are available, maternity waiting homes are poorly utilized. This study therefore explored women’s perspectives on these facilities, the decision-making process regarding the use of maternity waiting homes, and factors affecting utilization. Data for the study were collected from 22 in-depth interviews with women of reproductive age from nine health centre catchment areas, both at facilities with a maternity waiting home and facilities without a maternity waiting home.

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Since previous studies have suggested that husbands could play an important role in supporting their families and assisting their wives in seeking healthcare services, **Chapter 6** reports on research which explored men's experiences and perceptions regarding their wives' use of maternity waiting homes in Kalomo district, Zambia. In-depth interviews with the husbands/partners of women attending the under-five clinic at a health centre with a maternity waiting home were conducted.

Further, since previous research identified several personal and environmental factors which affect use of maternity waiting homes in Kalomo, Zambia, **Chapter 7** presents the findings of a quantitative study that investigated the association between the presence of a maternity waiting home and these factors, as well as whether this association differs between the respondents who have access to a health centre with a maternity waiting home and those who do not. An interviewer-administered questionnaire was distributed among women of reproductive age (n=340) in 15 rural health centres – 10 of these centres had a maternity waiting home, and 5 did not.

A final study is presented in **Chapter 8**, and it focuses on the role of SMAGs. These groups have the aim of increasing utilization of skilled and facility-based maternal healthcare services in rural Zambia. Previous research has suggested that these kinds of community-centred interventions are likely to be effective in leading to desired health behavioral change and favourable health outcomes, but to date, it is rather unclear how they are perceived by the community, or why they are so successful. This study, therefore, explored the perspectives of 46 respondents (SMAG members, mothers, fathers, headmen, and nurses) regarding the selection, training, roles, achievements, and challenges of the SMAG programme in Kalomo, Zambia, using in-depth interviews.

Finally, **Chapter 9** provides a general discussion of all the empirical studies presented in this dissertation, and discusses the results in light of the existing literature, highlights the methods used to conduct the current research, and discusses the implications of the research findings which lead to recommendations for future research, and the development of new intervention programmes.

Chapter 2

Understanding the psychosocial and environmental factors affecting utilization of maternal healthcare services in Kalomo, Zambia: A qualitative study

Published as:

Sialubanje C, Massar K, Hamer DH, Ruiter RAC. (2014) Understanding the psychosocial and environmental factors affecting utilization of maternal healthcare services in Kalomo, Zambia: A qualitative study. *Health Education Research*, 29(3): 521-532

Abstract

This qualitative study aimed to identify psychosocial and environmental factors contributing to low utilization of maternal healthcare services in Kalomo, Zambia. Twelve focus group discussions (n=141) and 35 in-depth interviews were conducted in six health centre catchment areas. Focus group discussions comprised women of reproductive age (15-45 years), who gave birth within the last year; in-depth interviews comprised traditional leaders, mothers, fathers, community-health workers, and nurse-midwives. Perspectives on maternal health complications, health-seeking behavior and barriers to utilization of maternal healthcare were explored. Most women showed insight into maternal health complications. Nevertheless, they started antenatal care visits late and did not complete the recommended schedule. Moreover, most women gave birth at home and did not use postnatal care. The main reasons for the low utilization were the low perceived quality of maternal healthcare services in clinics (negative attitude), negative opinion of important referents (subjective norms), physical and economic barriers such as long distances, high transport and indirect costs including money for baby clothes and other requirements. To improve, our findings suggest need for an integrated intervention to mitigate these barriers. Our findings also suggest need for further research to measure the elicited beliefs and determine their relevance and changeability.

Introduction

Complications of pregnancy and labour are still the leading causes of death among women of reproductive age in most developing countries where 99% of all maternal deaths occur. Sub-Saharan Africa and South East Asia account for more than 90% of these deaths (UNFPA, 2013; WHO, 2005; WHO, 2012; Ochako *et al.*, 2011), with sub-Saharan Africa being more affected than any other region in the world (Alvarez *et al.*, 2009).

Zambia is one of several sub-Saharan African countries with the highest rates of unfavourable maternal health outcomes. The latest 2007 Zambia demographic and health survey (CSO, 2009) found that the country has a high maternal mortality ratio of 591 deaths per 100 000 live births – a ratio which has remained steadily high over the past fifteen years. Nevertheless, most common direct causes – haemorrhage, complications of abortion, pre-eclampsia, puerperal sepsis – are known (Ochako *et al.*, 2011; Alvarez *et al.*, 2009; CSO, 2009; Font *et al.*, 2000; Karim *et al.*, 2010) and are largely preventable through optimal utilization of available maternal healthcare services – including early and focused antenatal care, giving birth in a health facility under skilled supervision and postnatal care (WHO, 2005).

To ensure optimal maternal and newborn health outcomes, the Zambian Ministry of Health (MOH, 2008) in line with the World Health Organization's (WHO) guidelines (WHO, 2005) recommend that women seek antenatal care as soon as they realise they are pregnant, preferably at 14 weeks, and that they should make a minimum of four antenatal visits before they give birth. In addition, each visit should be conducted by a skilled health provider, preferably a midwife or doctor. Moreover, the Ministry of Health also recommends that women give birth in a health centre or hospital where they can access skilled attendance from midwives and doctors. After giving birth, women are advised to return to the health facility for postnatal care, preferably within the first six days postpartum.

Nevertheless, utilization rates of these services in most rural parts of Zambia are still low (CSO, 2009; MOH, 2008). The 2007 survey (CSO, 2009) found that more than 50% of the women in Zambia did not complete the required four antenatal visits during pregnancy and that the majority (>60%) did not return for postnatal care. In addition, more than 50% of all childbirths nationwide took place at home where they were assisted by traditional birth attendants, older women, grandmothers or neighbours. Moreover, the largest proportions of the women who gave birth at home were those living in rural areas. As such, these women miss opportunities to receive skilled services provided by midwives and other skilled staff in the health centres (MOH, 2008). In addition, the latest national health reports (MOH, 2011) show that more than 80% of the women in Kalomo district start their antenatal visits late, after the 20th week and only 7% of the women start their antenatal visits before the recommended 14th week of pregnancy. Moreover, more than 50% of the women give birth at home.

The reasons for this low use are not yet fully understood. So far, no study has been conducted to explore why there is low utilization of maternal healthcare services in rural

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Zambia. Most published studies emphasise logistical barriers with little or no focus on psychosocial factors (Solarin and Black, 2012; Ikamari, 2004; Mpembeni *et al.*, 2007; Jat *et al.*, 2011; Stekelenburg *et al.*, 2004; Stekelenburg *et al.*, 2005; Izugbara and Ngilangwa, 2010). For example, although Stekelenburg and colleagues provided insight into the health system factors and logistical barriers that contribute to poor use of maternal healthcare (Stekelenburg *et al.*, 2004; Stekelenburg *et al.*, 2005), they did not explore personal factors influencing women's decisions regarding utilization of maternal healthcare services. Several studies have explored the importance of psychosocial factors in influencing utilization of these services (Lubbock and Stephenson, 2008; Titaley *et al.*, 2010) and have concluded that the use of health services is not only determined by economic and logistic barriers, but also by individual factors such as attitude, normative beliefs and perceived behavioral control. In addition, past healthcare-seeking behavior, as well as demographic factors including age, number of children, education level, economic status, have also been shown to influence healthcare-seeking behavior (Izugbara and Ngilangwa, 2010; Lubbock and Stephenson, 2008; Titaley *et al.*, 2010).

In summary, although most maternal health complications can be prevented through optimal utilization of available healthcare services, the reasons for low utilization of these services are not yet fully understood. The current study was therefore designed to explore psychosocial and environmental factors affecting utilization of maternal healthcare services in Kalomo, Zambia. Insight into these factors is important for the design of public health interventions to promote utilization of these services in rural Zambia, and to ultimately decrease maternal mortality nationwide.

Methods

Study design

The study used both focus group discussions and in-depth interviews to provide a detailed understanding of the issues under investigation. The Tropical Diseases Research Centre Ethics Review Committee and the ministry of Health Research and Ethics Committee in Zambia granted ethical approval.

Study setting

The study was conducted in Kalomo district, located 360km south of the capital Lusaka, and covering a total surface area of 15 000 km². It has an estimated population of 275, 779 (CSO, 2010) with an annual growth rate of 4.4%. Despite subsistence farming and cattle rearing as major economic activities, the district is one of the poorest in the country, with more than 70% of its population living on less than a dollar per day (CSO, 2007). Administratively, the district is divided into three constituencies, four chiefdoms and twenty political wards. The health system in the district comprises two hospitals, thirty-four health centres and several health posts. The main players in the maternal health programmes are the Ministry

of Health, missionaries, non-governmental organizations, community leaders and various community-based health agents, including traditional birth attendants.

Sampling techniques

Selection of study participants was done using a purposeful homogeneous sampling technique (Varkevisser *et al.*, 2003). Five rural health centres with the lowest maternal healthcare service utilization rates in the district were selected with assistance from the District Medical Office. After identifying the five health centres, we selected two villages from each health centre catchment area, giving a total of ten villages. Selection of the villages was done in consultation with local health centre staff and neighbourhood health committee members. Apart from the five rural health centres, one urban health centre was also included in the study in order to compare findings between the rural and urban settings.

Study population and data collection

The focus group discussion participants comprised women of reproductive age, aged between 15 and 45 years who gave birth within one year prior to the study. Women aged below 15 and above 45 years were excluded from participation. In addition, women who had resided in the area for less than six months were also excluded because the investigators thought these women would not have had enough local experience on maternal health challenges and available resources.

Twelve focus group discussions were conducted as follows: two in each health centre catchment area, one per village, and two in the urban health centre catchment area. Each focus group discussion was conducted in a quiet place in each village and lasted between one 1 and 1.5 hours. The focus group discussions were arranged into two groups, according to age: women aged between 15 and 19 years and those aged above 20 years. Each focus group discussion consisted of 12 participants, except for 1 focus group discussion conducted in the urban health centre catchment which consisted of 9 participants. After these 12 focus group discussions, data saturation was achieved; that is, after 10 focus group discussions, no more substantial information was obtained.

A total of 35 in-depth interviews were conducted with key informants from each health centre catchment area. Key informants consisted of traditional leaders, civic leaders, mothers and fathers, nurse-midwives from local health centres, traditional birth attendants, neighbourhood health committee members, and community health workers. In-depth interviews were conducted in the community in a quiet, private and confidential place and lasted 20 to 30 minutes. Both focus group discussions and in-depth interviews were conducted in Tonga; interviews with health centre staff were conducted in English.

Before each focus group discussion and in-depth interview, written consent was obtained from each participant by requesting them to read and sign the consent form, which was translated into the local language-Tonga. Research assistants read the consent form for those who could not read. Each focus group discussion and in-depth interviews

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was facilitated by two trained research assistants using a semi-structured interview guide which was translated into Tonga. One research assistant conducted the discussion/interview, while the second one recorded. The principal investigator attended a few focus group discussions and interviews to ensure the data collection protocol was consistently followed by the research team members.

Research instrument

A semi-structured interview guide for the focus group discussions and interviews was developed based on the logic model and had three pre-determined themes, awareness about maternal healthcare services, maternal healthcare-seeking behavior and personal and environmental determinants of maternal healthcare service utilization. The logic model was based on the PRECEDE part in Green and Kreuter's (2005) PRECEDE/PROCEED model, which prescribes consideration of health-related behavioral determinants and environmental conditions at multiple levels (Bartholomew *et al.*, 2011). Identification of personal determinants was based on the Theory of Planned Behavior (TPB) (Fishbein and Ajzen, 2010; Glanz *et al.*, 2008) and included, attitude, subjective norms and perceived behavioral control. In addition, logistical barriers and enablers to the use of maternal healthcare services were also explored.

Data analysis

All voice recordings from focus group discussions and interviews were transcribed and translated into English by research assistants. To check for accuracy, 20% of the transcripts were back – translated into Tonga. Members of the research team then compared the Tonga and English versions for differences and similarities while listening to the original voice recording. After verification of accuracy in translation, each transcript was then thoroughly read by one research assistant while the other one was listening to the corresponding voice recording. Each translated transcript was compared with the hand-written field notes that the research assistants had prepared during the focus group discussions and interviews. After proof-reading and making corrections, the transcripts were saved on a password-protected computer. The word documents were then exported into QSR (NVivo 8.0 software) for processing. The exported data were then coded and the categories and key sub-themes were identified. Data analysis was based on the three predetermined themes. An inductive approach was used to derive the sub-themes from the main themes by content-analysing and grouping all the similar statements made with respect to particular themes. Several sub-themes emerged from the data analysis; all sub-themes are described below in the respective sections for the main research themes.

Results

1 Demographics

A total of 176 (n=176) respondents participated in the study. Of the 141 focus group discussion participants, 68 (48.2%) were aged between 15 and 19 years, 50 (35.5%) between 20 and 34 years, and 23 (16.3%) were above 35 years. Of the 35 key informants, 24 (68.6%) were aged between 20 and 34 years, 10 (28.6%) were aged between 35 and 45 years, and 1 (2.8%) was 19 years old. 141 (80%) were married, and 96 (68%) had between 1 and 5 children. 85 (48.3%) had primary school education and 131 (74%) were farmers with an average monthly income of less than \$20 per month. There were no major differences in characteristics among respondents from rural and urban health centres in terms of income and level of education; the only notable difference was among the health workers who had attained tertiary education, and had an average monthly income of more than \$200 (see Table 1).

2 Perspective on maternal health problems

Most respondents mentioned that many women were aware of the physical complications during pregnancy and childbirth and described various complications ranging from minor abdominal pain and spotting during pregnancy to life threatening complications including retained placenta, excessive bleeding, cord prolapse, hypertensive disorders and obstructed labour. Maternal health complications were described as severe, and that some women even died in the process of giving birth; those who survived either ended up losing their babies or developed long-standing obstetric complications.

“Yes, in this community many women face a lot of complications during pregnancy and childbirth; yes even dying, you or your baby can die” (36 year old mother)

Pregnancy and childbirth complications were seen as resulting from poor maternal healthcare seeking behavior, specifically poor antenatal care attendance and giving birth at home.

“Most women who give birth at home are the ones who face problems during labour because most TBAs and old women do not have enough knowledge to assist them” (25 year old nurse-midwife)

Regarding sources of information on maternal healthcare services, respondents had mixed views: older respondents mentioned nurses as the main sources of information and that most women obtained this information from the health centres during their previous pregnancies. In addition, respondents mentioned that nurses collaborated with community-based agents and local headmen to disseminate this information in the community.

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“We are taught by the nurses and TBAs; the community health workers and NHCs (neighbourhood health committee members) also tell us to go for antenatal examinations when we are pregnant” (36 year old mother)

In contrast, most young respondents explained that they did not get much information from nurses and community health workers, rather, their parents and friends were their main sources of information.

“For us young ones, we get information from our parents; some young people ask their friends when to start going for antenatal examinations” (19 year old mother)

Table 1: Background characteristics of the respondents of the in-depth-interviews (n=35) and focus-group discussions (n=141).

Characteristic	In-Depth Interviews n (%)	Focus Group Discussions n (%)
Age in years		
15-19	1 (2.8)	68 (48.2)
20-34	24 (68.6)	50 (35.5)
35-45	5 (14.3)	23 (16.3)
>45	5 (14.3)	
Sex		
Male	20 (57.1)	-
Female	15 (42.9)	141 (100)
Marital Status		
Single	6 (17.1)	25 (17.7)
Married	26 (74.3)	115 (81.6)
Divorced	2 (5.7)	1 (0.7)
Widow	1 (2.9)	-
Number of children		
1-2	-	60 (42.6)
3-5	-	36 (25.5)
6 and above	-	45 (31.9)
Cadre		
Mother	3 (8.6)	
Father	2 (5.7)	
Midwife	4 (11.4)	
Nurse	1 (2.9)	
EHT	2 (5.7)	
TBA	7 (20)	
Community Health worker	4 (11.4)	

Table 1 (Continued)

Characteristic	In-Depth Interviews n (%)	Focus Group Discussions n (%)
Cadre		
NHC member	5 (14.3)	
Village headman	6 (17.1)	
Civic leader	1 (2.8)	
Level of education		
Never attended school	-	5 (3.5)
Lower primary (1-4 years)	-	17 (12.0)
Upper primary (5-7 years)	7 (20)	61 (43.3)
Junior secondary (8-9 years)	5 (14.3)	47 (33.3)
Senior Secondary (10-12 years)	16 (45.7)	11 (7.8)
Tertiary	7 (20)	-
Occupation		
Unemployed	3 (8.6)	25 (17.7)
Farmer	24 (68.6)	107 (75.9)
Self-employed	1 (2.9)	9 (6.4)
Formal employment	7 (20)	-
Level of income		
<\$20	18 (51.4)	119 (84.4)
\$20-49	4 (11.4)	14 (9.9)
\$50-99	3 (8.6)	6 (4.3)
\$100-199	2 (5.7)	2 (1.4)
>200	8 (22.9)	-
Place of residence		
Chifusa	5 (14.4)	
Dimbwe	7 (20)	
Mawaya	5 (14.3)	
Mubanga	6 (17.1)	
Munkolo	6 (17.1)	
Simalundu	6 (17.1)	

3 Healthcare-seeking behavior and utilization of maternal healthcare services

Use of Antenatal Care services. Our findings show that, despite starting late, most mothers use antenatal care services provided by nurses and traditional birth attendants in the health centres. Older respondents explained that, although most pregnant women did use antenatal care services, most started their visits late, typically after five months of

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pregnancy and most of them did not complete the recommended four-visit-schedule. On why some women start their visits late, most respondents explained that many mothers delayed starting their antenatal visits because of normative beliefs and long distances to the clinic. With regard to providers of antenatal care services, all respondents revealed that nurses, midwives and traditional birth attendants were the main providers.

Utilization of delivery services. Analysis of the narratives indicated that most mothers gave birth at homes; they only go to the clinic if they develop labour complications or if during antenatal visits they were told the baby was not lying well in the womb. Asked on which group of women gives birth at home, most respondents mentioned mothers with many children.

“Most women with many children don’t come to our clinics to give birth; they give birth at home....” (57 year old nurse-midwife)

In contrast, most respondents from the urban health centres and most young respondents from both urban and rural health centres argued that they gave birth in the health facilities. Most young respondents viewed themselves as having no experience in child-birth and explained that they give birth at the health centre because they fear developing labour complications at home.

“Most of us young ones give birth at the clinic because we have no experience; we fear to die” (19 year old mother)

Regarding birth attendants, most respondents mentioned that nurses and traditional birth attendants were the main ones assisting women during child birth. They explained that traditional birth attendants also assist in the labour ward if the nurse was alone or if she was not there. Similarly, most nurse-midwives confirmed that, due to inadequate staffing levels in the health centres, they collaborated with traditional birth attendants to assist women during childbirth in the health centres.

“Yes, TBAs do assist here as you know we are under-staffed in these clinics” (56 year old nurse-midwife)

With regard to birth attendants for the women who give birth at home, most respondents mentioned that traditional birth attendants and old women attend to those mothers. They added that some women get assistance from their neighbours and that others give birth by themselves, unassisted.

“Most of us are assisted by TBAs...when you feel the labour pain, you just send someone to call her” (43 year old mother)

Concerning practices that put women at increased risk of developing labour complications, respondents mentioned that women's delay in making decisions to go to the clinic and traditional birth attendants' delay in referring women to the clinic put some women at risk of developing complications. Most participants mentioned that some women give birth at home because they wait until they are in established labour and at this point they end up giving birth at home because they are unable to travel to the clinic anymore. Furthermore, respondents explained that some traditional birth attendants and old women delay referring these women to the clinic; they want to try until they either failed, or the woman developed complications.

"Most women develop complications because TBAs delay them at home; they only allow them to come when they see that they have developed complications or the baby has stopped breathing" (57 year old nurse-midwife)

Utilization of postnatal care services. Most respondents mentioned that many women do not receive any postnatal care services from the clinic. They explained that most women only go to the clinic to take their children for under five clinics outside the postnatal period.

Asked on why mothers do not go for postnatal care, respondents explained that mothers who gave birth at home were either shouted at or made to pay a penalty before they were attended to at the clinic; mothers who had no money to pay and those who feared to be shouted at opted not to go for postnatal care.

"If you go to the clinic after giving birth at home, nurses make you pay before they examine your baby" (36 year old mother of 6)

In contrast, some respondents mentioned that some mothers do go to the clinic after giving birth. They explained that some mothers go to the clinic for the baby to get the HIV blood test if the mother was HIV positive. Respondents added that some mothers want their babies to be examined so that they know whether they are okay.

"Some mothers go to the clinic to be examined after delivery so that they know whether their baby is okay" (24 year old mother of 3)

4 Personal and environmental factors contributing to poor use of maternal healthcare services

Attitude towards health care providers and quality of maternal healthcare services.

Mothers' (negative) attitudes towards nurses and midwives and the quality of services they provided negatively influenced their decisions to use various maternal healthcare services. Most respondents explained that some nurses insist on pregnant women going with their husbands to the clinic for antenatal care; they also tell pregnant women to take baby clothes with them when they go to the clinic for antenatal care and labour. In addition, respondents

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explained that if mothers failed to either go with their male partners or take baby clothes, nurses and midwives would shout at them in the presence of other people. Respondents explained that, because of the negative experience mothers had with some nurses at the health centre, most of them ended up not returning for antenatal, childbirth or postnatal care at the health centre; they opted to give birth at home.

“Most of us give birth at home because we fear the way nurses treat us at the clinic; we face a lot of problems. They shout at us. Some of them even refuse to assist us during labour if we don’t have baby clothes or ‘jik’ (bleach)” (40 year old mother)

In contrast, nurse-midwives explained that as mothers go for antenatal care, they are advised to go with their husbands or partners so that together, they are counselled and tested for HIV to prevent mother to child transmission of the HIV virus. They also explained that, as a way of preparing for childbirth, mothers are advised to buy baby clothes and that they should carry these when going for labour. Most nurses mentioned that no mother is sent away from the clinic for either failing to go with their partners or failing to take baby clothes.

“We advise them to come with their partners so that they are counselled together; we also advise them to prepare for the baby and buy enough baby clothes. No mother is chased for failing to come with their partners or bringing baby clothes”(57 year old nurse-midwife)

Moreover, most respondents mentioned that mothers believed that nurses did not have enough midwifery skills to assist mothers during childbirth. Furthermore, respondents stated that nurses were never found at the clinic; they only found traditional birth attendants who just ‘pressed on their abdomen’ and sent them home without confirming the condition of the baby in the uterus.

“The nurses are never there at the clinic. We only find TBAs who just feel and press on your abdomen. You won’t even know how the baby is lying; sometimes she tells you that the baby is lying well when it is not” (42 year old mother)

In contrast, most nurses explained that staffing levels were low in the health centres, and that if nurses went out for workshops or ordering of medical supplies at the district medical office, health centres would be left unattended. They explained that in most cases, people in the community would know when the nurse was away from the health centre, and this made some mothers opt to deliver at home.

Opinions of important others. Our findings show that various opinions of important others within the community had a negative influence on the mothers’ decision to utilise maternal

healthcare services. For example, most respondents mentioned that some mothers delayed starting antenatal care visits because they believed that some important people in the community did not approve of one's pregnancy being exposed to non-family members when it was still small. Thus, they delayed starting antenatal care until the pregnancy was large enough, usually after five or six months.

“Many women delay starting ANC because they are told that it is wrong for them to show their small pregnancy to non-family members; so they wait until the pregnancy is large enough, usually after 5 or 6 months” (24 year old mother)

In addition, most participants stated that some women give birth at home because they believe that some important people in the community did not approve of pregnant women being examined and assisted by male birth attendants as it was embarrassing to the woman and her family.

“Most women give birth at home because they feel shy and embarrassed to be assisted by a man” (40 year old mother)

Perceived and actual barriers. With regard to barriers that prevented pregnant women from using services, respondents stated that mothers faced various challenges ranging from capability to convince important others about the benefits of giving birth in a health centre and early referral, to physical and socioeconomic barriers.

“Those old women [parents] and TBAs are the ones who decide when we should go to the clinic. We can't force them to take us. They will only take you to the clinic when they feel that you have been in labour for a long time” (19 year old mother)

Concerning physical barriers, respondents stated that long distances to the health centres, poor road network, and non-availability of transport prevented many women from completing antenatal care visit schedules and giving birth at the clinic. Most respondents explained that many people in their communities live very far from the health centres (more than 10-15 km) and that in some instances (especially in the Zambezi escarpment in the southern part of the district) there were no roads and getting the pregnant mother to the health centre was a huge challenge. As a result of these physical barriers, most pregnant women ended up giving birth at home or on the way to the clinic.

“The main problem here is distance to the clinic. The distances are too long....women have to walk all the way to the clinic. Some pregnant women can't manage to walk to the clinic” (42 year old headman)

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In addition, participants mentioned that some women gave birth at home because of high transport costs and other indirect costs such as baby clothes and other requirements, and food while waiting for labour at the health centre. Respondents explained that most mothers who failed to raise money for these requirements ended up giving birth at home because they believed that they lacked capability to face nurse-midwives (with perceived negative attitudes towards them) and explain why, for example, they failed to buy required baby clothes.

Discussion

This study suggests important psychosocial and environmental factors negatively influencing pregnant women's health-seeking behavior in Kalomo, Zambia. Overall, our findings show that, most women are willing to use maternal healthcare services; however several personal and environmental barriers negatively influence their health-seeking behavior.

Consistent with other studies (Izugbara and Ngilangwa, 2010; Lubbock and Stephenson, 2008; Titaley *et al.*, 2010), our findings show that most women in Kalomo district do have insight into various maternal health problems that affect them and are willing to use healthcare services to improve pregnancy and childbirth outcomes. Furthermore, in contrast to one Zambian study (Banda *et al.*, 2012), our findings suggest that low utilization of these services is not due to lack of knowledge about the benefits of maternal healthcare use. Rather, other factors might be influencing pregnant women's health-seeking behavior. This finding suggests that, although knowledge is a necessary pre-requisite determinant in the adoption of health-promoting behaviors, it may not be sufficient to enable behavior change (Ajzen, 1991; Bartholomew *et al.*, 2011; Fishbein and Ajzen, 2010; Glanz *et al.*, 2008; Weinstein and Sandman, 1992; Bandura, 2001).

Our findings show that mothers' negative attitudes towards nurses and the quality of health services negatively influence women's decision to use the services. Mothers who had negative experience with nurses during antenatal care or childbirth during previous pregnancies expressed negative attitude towards nurses and the services they offer, and this negatively influenced their intentions to use these services in subsequent pregnancies. Our findings further suggest that the mothers' negative experience with nurses was the main reason for the difference in attitude toward maternal healthcare use between the young and older mothers. Most young mothers who had little or no past experience with nurses and healthcare services tended to be more positive about the benefits of using the services than the older mothers who had encountered 'abusive nurses' and the 'poor quality services' at the health centre. This finding is important as it shows that before engaging in the intended health behaviour, women will evaluate the expected outcomes, based on the available information and past experience. Our findings are in line with past research from other low income countries (Stekelenburg *et al.*, 2004; Stekelenburg *et al.*, 2005; Izugbara and

Ngilangwa, 2010; Lubbock and Stephenson, 2008; Titaley *et al.*, 2010; Wilkinson & Callister, 2010; Farnes *et al.*, 2011; Thaddeus and Maine, 1994) which has shown the importance of quality of care during labour and nurse-midwife's attitudes in predicting women's decision to use maternal healthcare services in subsequent pregnancies. This finding also underscores the need for public health intervention to ensure that young mothers have positive experiences when going to the clinic, perceive the benefits, are aware of other young mothers using maternal healthcare and are provided with the necessary resources for travel to and delivery at the health centre.

Regarding subjective norms – the belief that specific important individuals or groups approve or disapprove of one's behavior (Fishbein and Ajzen, 2010; Glanz *et al.*, 2008) – our findings show that most women only engage in behaviours that they believe were approved by important members of their family and community and these beliefs negatively influenced their use of healthcare services. For example, our findings suggest that one of the most important beliefs strongly held by women was that a 'young pregnancy' should not be exposed to a non family member. This belief might negatively influence antenatal care use as women who have strong beliefs in this social norm and high motivation to comply end up delaying first antenatal visits and/or are less likely to complete their antenatal visit schedules. Similarly, the belief that it is 'not right' for pregnant women to be assisted by male birth attendants can also negatively influence women's decision to give birth at the health centre. Furthermore, our findings suggest that, compared to younger mothers, older mothers tended to hold stronger beliefs and higher motivation to comply with 'social pressure'. The strength of this normative belief seems to be the reason why older women prefer giving birth at home compared to the younger women. In addition, our findings suggest that, because older women had stronger belief in the opinion of important referents, they consulted traditional birth attendants and older women before deciding to seek care at the health centre. These findings are comparable with research reported elsewhere in Zambia and Ghana, Nicaragua and Indonesia (Stekelenburg *et al.*, 2005; Lubbock and Stephenson, 2008; Titaley *et al.*, 2010; Wilkinson & Callister, 2010; Farnes *et al.*, 2011) which showed the importance of the role of the cultural perceptions, beliefs, expectations and practices in the woman's decision to seek healthcare services.

Regarding the perceived barriers, our findings show an important interaction between internal and external control factors in influencing women's health-seeking behavior (Fishbein and Ajzen, 2010; Thaddeus and Maine, 1994). Consistent with previous research (Ikamari, 2004; Mpembeni *et al.*, 2007; Jat *et al.*, 2011; Stekelenburg *et al.*, 2004; Stekelenburg *et al.*, 2005; Izugbara and Ngilangwa, 2010; Lubbock and Stephenson, 2008; Titaley *et al.*, 2010; Wilkinson & Callister, 2010; Farnes *et al.*, 2011 30-32; Thaddeus and Maine, 1994), our findings suggest that both low perceived behavioral control (i.e. a person's belief in one's capability to accomplish a given performance) and other external factors such as long distances, poor road network, high transport costs, baby clothes and other indirect costs negatively influence the woman's decision to perform the desired health behavior. Women who experience many external barriers are likely to perceive less control

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over intended behavior with regard to healthcare utilization (Fishbein and Ajzen, 2010; 30, Wilkinson & Callister, 2010; Thaddeus and Maine, 1994). That is, even if women have the knowledge about the benefits of using a health service, they may not use the service until they feel confident in overcoming perceived barriers and if external barriers are removed. For example, our findings indicate that most women give birth at home because of long distances to health facilities, bad roads, non-availability of transport, and high transport costs. In addition, our findings report that many women give birth at home because they fail to raise money to buy baby clothes and other requirements. Those who fail to buy baby clothes give birth at home because they fear being harassed by nurses at the clinic. Similar findings were also reported by Stekelenburg *et al.* (2004) and Thaddeus and Maine (1994) and showed the importance of logistical barriers in limiting access to, and utilization of, maternal healthcare. Together these findings stress the need for public health interventions to focus on mitigating these physical barriers and indirect costs before women are expected to use the services.

A number of potential limitations should be noted. First, like other qualitative studies, the findings of our study may not be generalisable. The purpose of the study was to gain insight into the factors affecting utilization of maternal healthcare services. For these findings to be generalised, further research needs to be conducted to measure these determinants. Second, the focus of the study was on a rural district which is predominantly Tonga, making the findings not representative of other tribal groupings in Zambia. Thirdly, the fact that the principal investigator attended some of the interviews as an independent observer may have influenced some participants in some way since most participants knew him as he had worked there before as a District Medical Officer.

Conclusion

In conclusion, the present study provides information on the important psychosocial and environmental factors negatively influencing pregnant women's health-seeking behavior in rural Zambia. Although most women have insight into maternal health complications and that most of them have high intention to use maternal healthcare services, several personal and environmental barriers – mothers' negative attitude toward nurses and health services, subjective norms, perceived and actual barriers – all prevent them from accessing and utilising the services and lead to unintended maternal health outcomes.

Thus, our findings suggest need for an integrated intervention which could help – not only mitigate personal, logistical and health system barriers – but also develop and support relationships and trust between various stakeholders, and ultimately increase effectiveness and use of maternal healthcare services in rural Zambia. For the design of such an integrated intervention, Bartholomew *et al.* (2011) suggest the following process: 1) elicitation of salient beliefs, 2) changing intentions by changing salient beliefs, 3) changing behaviour by changing intentions, and 4) increasing skills or decreasing environmental constraints. To elicit salient beliefs, Fishbein and Ajzen (2010) suggest qualitative followed by quantitative methods. To change intentions, Witte (1995) suggests organising the results

of the determinants analysis in a list of relevant categories – for example, which beliefs need to be changed, reinforced or introduced. Thus, to mitigate psychosocial barriers, our findings suggest need for further research to measure the elicited beliefs and determine their relevance and changeability.

To decrease environmental constraints and improve quality of care, our findings suggest the need for: 1) subsidising health costs through provision of resources for mothers to meet indirect costs such as transport costs, baby-mother packs, and food while waiting for labour at the clinic (Sullivan & Hirst, 2011); 2) providing maternity waiting homes in clinics to mitigate physical barriers such as travelling long distances to health centres while in labour; 3) improving motivation and staffing levels for nurses and midwives through increased training, equitable distribution, and retention – for example, by extending the *Zambian Health Worker Retention Scheme* (Gow *et al.*, 2013) to nurses and midwives, which is currently focusing mainly on doctors; 4) strengthening collaboration and enhancing trust between nurses and traditional birth attendants by providing the latter with resources, training and skills in midwifery; 5) supporting mothers through social networks – such as *Safe Motherhood Action Groups*.



Chapter 3

Personal and environmental predictors of the intention to use maternal healthcare services in Kalomo, Zambia

Published as:

Sialubanje C, Massar K, Hamer DH, RAC. (2014) Personal and environmental predictors of the intention to use maternal healthcare services in Kalomo, Zambia. *Health Education Research*; 29(6):1028-1040.

Abstract

Low maternal healthcare service utilization contributes to poor maternal and new born health outcomes in rural Zambia. The purpose of this study was to identify important factors influencing women's intention to use these services in Kalomo, Zambia. An interviewer-administered questionnaire was used to collect data from 1007 women of reproductive age (15-45 years) from 13 rural health centres with the lowest service utilization rates in the district. Questions included measures of (past) healthcare seeking behavior, psychosocial variables (attitude, perceived social norms, perceived behavioral control), logistical barriers (e.g. distance to the clinic) and sociodemographic variables (e.g. age, income and education level). Overall, our findings showed that most respondents had high intention to use healthcare services. Intention was positively associated with attitude, personal norms, behavioral control, education and income levels. Conversely, intention was negatively related to perceived social norms, age and distance. Multivariate regression analysis showed that, together, these variables accounted for 41.8% of the variance in intention, with perceived behavioral control being the strongest predictor of intention, followed by geographical distance and perceived social norms. These findings suggest that public health programmes mitigating these important factors are likely to motivate pregnant women to use maternal healthcare services.

Introduction

Low utilization of maternal healthcare services has been shown to be one of the main reasons for poor maternal health outcomes in resource-poor countries where most maternal deaths and complications occur (WHO, 2005; UNFPA, 2013; WHO, 2012; Moyer & Mustafa, 2013). Zambia is a developing country with a high maternal mortality ratio of 591 deaths per 100 000 live birth (CSO, 2009).

The latest 2007 demographic and health survey (DHS; CSO, 2009) confirmed the low use of maternal healthcare services in the country and showed that more than 80% of the Zambian pregnant women start their antenatal care visits late (mostly during the fifth month of pregnancy) and more than half (52%) of the women deliver at home. Moreover, the largest proportion of the women who deliver at home (80%) were those living in rural areas, where most deliver without skilled attendance and the majority (>60%) of these women did not receive postnatal care (CSO, 2009).

The reasons for this poor utilization of healthcare services are not yet fully understood. Studies conducted in Zambia and various African countries reported several factors as the main reasons for the poor use of maternal health care services, such as the mother's age and level of education (Ochako *et al.*, 2011; Babalola & Fatusi, 2009; Mrisho *et al.*, 2007), quality of health services (Moyer *et al.*, 2014), logistical and physical barriers (Choulagai *et al.*, 2013; Thaddeus & Maine, 1994) and long distances to the health facilities (Thaddeus & Maine, 1994; Mpembeni *et al.*, 2007; Gabrysch & Campbell, 2009; Gage, 2007; Gabrysch *et al.*, 2011; Stekelenburg *et al.*, 2004) as the main reasons for the poor use of maternal health care services. Although these studies provide insight into the diverse set of factors contributing to the poor use of maternal healthcare services, most of the studies focus on factors associated with past behavior (i.e. place of delivery, antenatal or postnatal care use during the previous pregnancy). This information is then taken to indicate the mother's likelihood to use maternal healthcare services in future pregnancies. They do not provide information on personal and environmental factors influencing women's decisions regarding intended utilization of these services. The use of maternal healthcare services has been shown to be a complex behavioral phenomenon, primarily determined by an individual's behavioral intention, which in turn, is determined by personal evaluations of pros and cons (attitude), the beliefs and behaviors of important others (perceived social norm) and personal capabilities (perceived behavioral control/self-efficacy) (Chakraborty *et al.*, 2003; Fishbein & Ajzen, 2010; Glanz *et al.*, 2008; Conner & Norman, 2005; Bartholomew *et al.*, 2011). Understanding women's intended health-seeking behavior is of paramount importance in the design of public health interventions for improving maternal health outcomes (Bartholomew *et al.*, 2011).

Thus far, few studies have been conducted in Zambia, one of them being a qualitative study recently conducted in Kalomo district (Sialubanje *et al.*, 2014). This study, which explored personal and environmental factors influencing women's decisions to use maternal healthcare services, revealed that most women give birth at home because of

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the low perceived quality of maternal healthcare services in clinics (attitude), the negative opinions of influential family and community members about these services (perceived social norms), perceived barriers such as long distances and high transportation costs when planning visits to the health centres (perceived behavioural control), and various logistical barriers such as lack of money for baby requirements and need for food when waiting to deliver at the health centre. However, despite providing important insight into the reasons for poor utilization of these services in the area, this study was exploratory and qualitative in design and, hence, did not measure the significance and importance of these factors, nor their relative contribution to the women's decision-making in the utilization of maternal healthcare services.

The purpose of the current study, therefore, was to determine the extent to which personal and environmental factors influence pregnant women's intention to use maternal healthcare services in rural Zambia. Insight into the importance and relevance of these factors is important for the design of educational and public health interventions focusing on improving maternal health outcomes in rural Zambia.

Theoretical framework

The present study used Fishbein and Ajzen's (2010) Reasoned Action Approach (RAA) to study women's motivation to use maternal healthcare services. Briefly, this theory postulates that an individual's behavioural intention determines behaviour, which, in turn, is predicted by attitude towards the behaviour, perceived social norms associated with the behaviour, and perceived behavioural control (Fishbein & Ajzen, 2010; Glanz *et al.*, 2008; Conner & Norman, 2005; Bartholomew *et al.*, 2011). Behavioural intention is the person's motivation or readiness to engage or not engage in the target behaviour (Glanz *et al.*, 2008; Conner & Norman, 2005; Bartholomew *et al.*, 2011; Sialubanje *et al.*, 2014). Attitude is the person's tendency to respond with some degree of favourableness or unfavourableness with respect to a given object (Fishbein & Ajzen, 2010; Glanz *et al.*, 2008; Conner & Norman, 2005; Bartholomew *et al.*, 2011). Perceived social norms are the person's beliefs about whether significant others think he/she should (or should not) perform the behaviour (Fishbein & Ajzen, 2010; Glanz *et al.*, 2008; Conner & Norman, 2005; Bartholomew *et al.*, 2011). Perceived behavioural control is the extent to which people believe that they are capable of performing a given behaviour, taking into account both internal barriers (the availability of information, skills, opportunities, and other requisite resources necessary to perform the behaviour) and external barriers or obstacles that need to be overcome. The variables from the model have been widely applied in studies investigating a wide range of health behaviours, such as breast cancer screening (Cooke & French, 2008), breast-feeding among HIV positive mothers (Kafulafula *et al.*, 2012), and mothers' intention to vaccinate their newborn children against hepatitis B virus (Harmsen *et al.*, 2012). The variables from the model have been shown to explain a large proportion of the variance in behavioural intention, which, in turn, has been shown to predict health behaviour.

Methods

Sampling and participants

This cross-sectional study was conducted in thirteen health centre catchment areas, twelve rural and one semi-urban, with the lowest institutional delivery rates in Kalomo district (for details, see Sialubanje *et al.* (2014)). It utilised a multi-stage convenience sampling method. The thirteen health centres were purposefully sampled based on the district health management information system reports (MOH, 2012), with help from the Maternal and Child Health coordinator and the District Information Officer at Kalomo District Medical Office. A total of 24 villages from the twelve rural health centres and one compound from the semi-urban health centre were sampled. Within these villages and compound, all eligible women of reproductive age, aged between 15 and 45 years who had given birth one year prior to the survey, were approached.

Women aged below 15 and above 45 years were excluded from participation. In addition, women who were new in the area (those who had resided there for less than six months in the area) were also excluded because the investigators thought these women would not have had enough local experience on maternal health challenges and available resources. The final sample comprised 1007 women.

Ethical considerations

Ethical approval for the study was obtained from the Tropical Disease Research Centre (TDRC) Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia. Before the start of each interview, participants were informed about the aim of the study – i.e. to identify the important psychosocial, behavioural and socio-demographic factors influencing women's intention to use antenatal, delivery and postnatal care services in rural Zambia. It was also explained that all collected information was confidential and that the participant's name or the name of the village would not be written on the questionnaire or the informed consent form. Next, written consent was obtained by having the participants either sign the consent form or mark with an 'X'. Only respondents who gave informed consent were interviewed.

Data collection

Two trained research assistants who were supervised by the principal investigator (first author) collected the data. The research assistants were recruited from within Kalomo district and received a three-day face-to-face training on how to administer the questionnaire. Both research assistants were male, aged between 25 and 30 years and had a full grade 12 certificate. Male research assistants were preferred to female ones because of logistical, safety and cultural reasons such as walking long distances in deep rural areas when making home visits. To ensure optimal interaction with the mothers and to minimise information concealment during the interview, research assistants spoke both English and the local language, Tonga.

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Prior to commencement of data collection, the questionnaire and the informed consent form were reviewed and pre-tested and the data from this pre-test were analysed. Where necessary, the questionnaire was revised.

A week before the interview, women were informed about the interview date by the village headmen and neighbourhood health committee members (NHC). On the interview day, the principal investigator and the research assistants travelled to the respective health centres from which the research assistants were directed into the households by the NHC members and community volunteers.

All the interviews took place in the participant's home or at a nearby convenient place – normally a quiet place under a tree, a few meters from the participant's house. Because of high illiteracy levels in the area, an interviewer-administered questionnaire was used which had been translated into Tonga. Each interview lasted between fifteen to twenty minutes. Women who were able to read were allowed to go through the questionnaire by themselves; the interviewer merely confirmed whether the questionnaire was correctly and completely answered.

Measures

The questionnaire was based on variables included in the theory of RAA (Fishbein and Ajzen, 2010) as well as findings from our previous qualitative study (Sialubanje *et al.*, 2014a). It was first developed in English, translated into Tonga by an independent bi-lingual expert and then back-translated into English. The final version of the questionnaire was in Tonga.

After general instructions were provided, socio-demographic variables (i.e. age, marital status, number of children, place of residence, distance to the nearest health centre, level of education, occupation and level of income) were measured. Next, past health-care seeking behaviour (i.e. time of first ANC visit, number of ANC visits, place of delivery and postnatal care use) was assessed. The last section consisted of the measures of the psychosocial variables – attitude, perceived social norms, perceived behavioral control and intention, which was the main outcome variable.

For each psychosocial measure, items that showed strong internal consistency (Cronbach's alpha .60 or $r > .40$) were combined and averaged into one variable based on principal component analysis. Table 1 shows the different items used in the present study and how they were clustered to measure underlying psychosocial constructs. All items were answered on a 7-point Likert scales ranging from 1=fully disagree to 7=fully agree, or similar labels.

Intention was measured using one item: "If you were pregnant today, how likely is that you would go and deliver at the clinic?"

In total, ten items were constructed to measure attitude. Principal component analysis revealed three variables, each measuring attitude towards a different aspect of maternal healthcare services use during pregnancy, delivering and postnatal care in future: *attitude towards maternal healthcare services* (three items, $\alpha = .80$), *attitude toward nurses* (four items, $\alpha = .70$), and *attitude towards traditional birth attendants (TBAs)* (three items, $\alpha = .60$).

Similarly, principal component analysis was performed on all normative items providing an estimate of perceived social norms, which resulted in three variables: perceived social norms towards maternal healthcare use (three items, $\alpha=.90$), perceived social norms towards the involvement of male nurses/midwives in maternal healthcare (three items, $\alpha=.90$) and *personal norm regarding the correctness of using maternal healthcare services (three items, $\alpha=.60$)*. Finally, perceived behavioural control towards using maternal healthcare services was computed with three items ($\alpha=.70$).

Data analysis

Data analysis was performed using SPSS version 21.0 (IBM SPSS Statistics 21, Inc.). Pearson correlations between behavioural intention, psychosocial measures socio-demographic variables, and past behaviour were calculated. Next, variables that showed significant and meaningful univariate association ($r>.10$) with behavioural intention were included as predictors in the hierarchical multivariate linear regression model. Finally, using multivariate analysis of variance (MANOVA), we compared the mean scores for the low and high intenders (using median split procedure) on the behavioural, normative and control belief items and calculated the standardised effect size measure, Cohen's d (Cohen, 1988; Cohen *et al.*, 2003). MANOVA was preferred over independent t -test or univariate ANOVAs to avoid type 1 error (i.e. alpha inflation error) or chance capitalisation (Field, 2009).

Results

Demographics

The sociodemographic characteristics and past maternal health-seeking behaviour of the respondents are described in Table 1. The mean age of the respondents was just above 27.3 years, and they had on average between 3 and 4 children. The large majority of the participants (79.2%) were married. About half of the respondents (54.6%) had primary school education, 10% had completed secondary school education, and 4.5% had never attended school at all. Concerning occupation, the majority (78%) were farmers and almost all respondents (94.5%) had an average income of less than \$20 per month. The large majority of the sample (95.5%) was living in rural areas and 83% lived more than 5 km from the nearest health centre.

Almost all respondents (98.4%) had attended ANC during their previous pregnancy, although many started their first ANC visits late (mean gestational age at first ANC booking=4.98 months). Most women did not complete the recommended 4-visit-ANC schedule (mean number of ANC visits=2.90). Regarding the place of delivery for the youngest child, more than half of the respondents, (53.8%) had delivered at home while 44.8% had delivered at the health centre and 2.0% had delivered on the way to the health centre.

Correlates of intention to use maternal healthcare services

Univariate associations (Pearson's correlations) among the personal and environmental variables as well as the mean scores with standard deviations are shown in Table 2. A small effect is $r=.10 - .23$, a moderate effect is $r=.24 - .36$ and a large effect is $r\geq.37$ (Cohen *et al.*, 2003; Field, 2009). A strong positive association with intention was found for perceived behavioural control. The other psychosocial variables, attitude, perceived social norm, and personal norm showed moderate positive associations with behavioural intention.

Table 1: Sociodemographic information and past maternal healthcare seeking behaviour of the women surveyed (n=1007).

Characteristics of respondents	Mean (SD) n (%)	Characteristics of respondents	Mean (SD) n (%)
Mean age	27.3 (7.8)	Occupation	
Mean number of children	3.6 (2.3)	Housewife	33 (3.2%)
Marital status		Business woman	37 (3.7%)
Single	163 (16.2%)	Farmer	785 (78%)
Married	798 (79.2%)	Formal employment	12 (1.2%)
Separated	5 (0.5%)	Others	140 (13.9%)
Divorced	29 (2.9%)	Level of income per month (\$)	
Widow	12 (1.2%)	<20	952 (94.5%)
Place of residence		20-49	36 (3.6%)
Urban	45 (4.5%)	50-99	8 (0.8%)
Rural	962 (95.5%)	>100	11 (1.1%)
Distance to the nearest health centre (km)		Any Antenatal Care (ANC) Use?	
<5	170 (16.9%)	Yes	991 (98.4%)
5-10	201 (19.9%)	No	16 (1.6%)
11-15	249 (24.7%)	Pregnancy duration at ANC booking (months)	4.98 (1.2)
16-20	354 (35.2%)	Mean number of ANC visits	2.90 (0.51)
>20	33 (3.3%)	Place of ANC attendance	
Level of education		Health Centre	997 (99%)
None	45 (4.5%)	Home	6 (0.6%)
1-4	159 (15.8%)	Other	4 (0.4%)
5-7	391 (38.8%)	ANC Provider	
8-9	305 (30.3%)	Nurse/midwife	797 (79.1%)
10-12	101 (10%)	Traditional Birth Attendant (TBA)	141 (14%)
Tertiary education	6 (0.6%)	Others	69 (6.9%)

Characteristics of respondents	Mean (SD) n(%)	Characteristics of respondents	Mean (SD) n(%)
ANC Provider		Any postnatal care (PNC)	
Nurse/midwife	797 (79.1%)	Yes	933 (92.6%)
Traditional Birth Attendant (TBA)	141 (14%)	No	74 (7.4%)
Others	69 (6.9%)	Age of child at first PNC	
Place of delivery		1 week and less	575 (61.6%)
Health centre	445 (44.2%)	2 weeks	194 (20.8%)
On the way to the health centre	20 (2.0%)	3 weeks	45 (4.9%)
Home	542 (53.8%)	4 weeks	73 (7.8%)
Birth attendant		5 weeks	12 (1.3%)
Nurse/midwife	327 (32.4%)	6 weeks	32 (3.4%)
TBA	483 (48.0%)	>6 weeks	2 (0.2%)
Parent	101 (10.0%)	Reason for not attending PNC	
Mother-in law	30 (3.0%)	Long distance	36 (48.6%)
Neighbour	23 (2.3%)	Transport cost	14 (18.9%)
Nurses and TBAs	29 (2.9%)	Mother was sick	7 (9.5%)
Parent and TBA	6 (0.6%)	Poor quality of services at the clinic	6 (8.1%)
Others	8 (0.8%)	Lack of knowledge	9 (12.2%)
Reason for home delivery		PNC is not important	2 (2.7%)
Long distances/no transport	213 (37.9%)		
Delay in making decision	128 (22.8%)		
No baby clothes to take to the health centre	120 (21.4%)		
Poor quality of services at the health centre	65 (11.6%)		
Fear of being shouted at by nurses	36 (6.4%)		

Table 2: Correlation of Intention with psychosocial, socio-demographic and healthcare utilization variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Intention														
2. PBC	.61**													
3. Attitude towards Nurses	.35**	.51**												
4. Attitude towards TBAs	-.23**	-.31*	-.24**											
5. Attitude towards MHS	.23**	.351**	.45**	-.15**										
6. Personal Norm	.22**	.28**	.26**	-.17**	.19**									
7. Perc. social norms MHS use	-.21**	-.27**	-.32**	.18**	-.14**	-.27**								
8. Perc. social norms male nurse	-.20**	-.15**	-.18**	.26**	-.03	-.20**	.24**							
9. Age	-.20**	-.26**	-.23**	.33**	-.22**	-.30**	.16**	.24**						
10. Parity	-.20**	-.24**	-.23**	.35**	-.18**	-.27**	.16**	.26**	.90**					
11. Distance to facility	-.31**	-.18**	-.18**	.22**	-.10**	-.22**	.13**	.17**	.17**	.21**				
12. Education level	.20**	.25**	.13**	-.21**	.20**	.27**	-.12**	-.16**	-.34**	-.42**	-.30**			
13. Income	.06	.06	.06	-.04	.06	.10**	-.14**	-.08**	-.02	-.07*	-.25**	.20**		
14. Number of ANC visits	.11**	.17**	.16**	-.09**	.24**	.19**	-.16**	-.00	-.09**	-.08*	-.13**	.20**	.12**	
15. Place of delivery	.16**	.20**	.30**	-.38**	.17**	.20**	-.05	-.21**	-.31**	-.34**	-.30**	.27**	.13**	.118**
M	5.35	4.69	5.12	5.90	6.48	5.21	5.73	6.20	27.30	3.61	-	-	2.88	-
SD	1.63	1.21	1.25	1.03	0.86	1.43	1.52	1.49	7.75	2.34	-	-	0.51	-

Note: **p<.01, *p<.05

Place of delivery: 1=health center; 0=home; education level: 1= \leq primary; 2= \geq secondary; income level: 1= $<$ \$20, 2= \geq \$20
PBC=Perceived Behavioral Control; MHS=Maternal Healthcare Services; TBAs=Traditional Birth Attendants

Most socio-demographic variables showed moderate to weak negative correlations with intention, except for education which showed a moderate positive correlation. Past maternal health-seeking behaviour (i.e. number of previous antenatal care visits and delivery in a health facility during the previous pregnancy) were positively correlated with intention, showing a weak univariate association.

Hierarchical multivariate linear regression analysis

The variables that showed a significant univariate association with intention were entered into a hierarchical linear regression model. The multivariate linear regression model consisted of three hierarchical steps (Table 3).

In step 1, we entered attitude, perceived social norm, perceived behavioural control and personal norms which were hypothesised to directly predict the intention to use maternal healthcare services in the future, $F(7,999)=87.14$, $p<.001$. Together, these variables accounted for 37.9% of the explained variance in intention. Perceived behavioural control and perceived social norms regarding male nurse/midwife involvement were the only two significant and unique predictors of behavioural intention. Attitude towards nurses, attitude towards TBAs, attitude towards maternal healthcare services, perceived social norms regarding maternal healthcare use, and personal norms, did not uniquely predict behavioural intention.

In step 2, demographic variables were entered into the model. This resulted in a slight significant improvement in the prediction of intention, F -change = 15.93, $p<.001$ and these variables accounted for an additional 3.7% of the explained variance in intention. In this step, perceived behavioural control ($b=.56$, $p<.001$), perceived social norms regarding male nurse/midwife involvement ($b=-.06$, $p<.05$) were complemented with distance to the nearest health centre ($b=-.21$, $p<.001$) as significant predictors of intention. In the third step, we entered past behaviour (number of ANC visits and place of delivery), but this did not significantly improve the prediction of intention, F -change=0.93, $p=.39$.

The final model accounted for just over 40% of the variability in intention ($R^2=41.8\%$). The final beta or regression coefficients showed that perceived behavioural control was the strongest unique predictor of intention followed by distance from home to the nearest health centre and perceived social norms regarding male nurse/midwife involvement. No other unique correlates of intention were found (see Table 3, final column).

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Table 3: Hierarchical regression models of the predictors on intention to use MHS.

Variable	<i>r</i>	β (Model 1)	β (Model 2)	β (Model 3)
Attitude towards MHS	.23**	.01	.00	.01
Attitude towards Nurses	.35**	.03	.01	.02
Attitude towards TBAs	-.22**	-.01	.03	.02
PBC	.61**	.57**	.56**	.56**
Subjective norms about ANC use	-.21**	-.02	-.02	-.01
Subjective norms about male nurses	-.18**	-.07*	-.06*	-.06*
Personal Norm	.22**	.04	.01	.01
Age	-.20**		-.03	-.03
Number of children	-.19**		.01	.01
Education level	.20**		-.02	-.02
Distance	-.31**		-.21**	-.21**
Number of ANC visits	.11**			-.02
Place of delivery	.16**			.03
	<i>R</i> ²	.379	.416	.418
	<i>R</i> ² change	.379	.037	.001
	<i>F</i> change	87.14**	15.93**	.93

Note: ** $p < .001$, * $p < .05$

ANC=Antenatal Care; MHS = Maternal Healthcare Services; PBC = Perceived Behavioral Control.

Differences between high and low intenders: MANOVA

To compare respondents who scored low and high in intention to use maternal healthcare services, a median split procedure was done, such that scores of 0-5 were dummy-coded as 0 (representing low to moderate; $M=3.87$, $SD=1.40$), and scores 6-7 were dummy-coded as 1 (representing high intention; $M=6.47$, $SD=0.50$; see Table 4).

A subsequent MANOVA analysis with attitude, perceived social norm and perceived behavioural control variables as dependent variables revealed significant multivariate differences in mean scores between respondents with low and high intention (Wilk's $\lambda=.36$, $F(8, 999)=225.96$, $p<.001$). Subsequent univariate ANOVAs revealed that high intenders had significantly higher perceived behavioural control (Cohen's $d=1.32$), more positive attitude towards nurses (Cohen's $d=.77$), a more positive attitude towards maternal healthcare services (Cohen's $d=.35$), and more positive personal moral norms towards maternal healthcare use (Cohen's $d=.32$) than low intenders, while scoring lower on attitude towards TBAs (Cohen's $d=.436$), perceived social norms regarding maternal healthcare use (Cohen's $d=.42$) and perceived social norms regarding male nurse involvement in maternal health care services (Cohen's $d=.27$; see Table 4).

As can be noted from table 3, RAA variables showed different effect sizes, with perceived behavioural control and attitude towards nurses showing large effect sizes (Cohen's $d>.80$)

(Cohen, 1988; Cohen *et al.*, 2003). All the other variables showed a small to moderate effect sizes (Cohen's $d=.10 - .40$). Similar MANOVAs and univariate ANOVAs on the underlying belief items for each construct showed significant differences between both intention groups on all belief items, except for one belief measuring personal norm ('It is not good to delay ANC until 6 or 7 months'), which showed no significant difference ($p=.98$). Again, control beliefs and behavioural beliefs regarding the attitude towards nurses showed large effect sizes when comparing high and low intenders (Cohen's $d>.8$), whereas moderate and small effect sizes were found for the other belief items (Cohen's $d=.1 - .4$).

Table 4: Differences in mean scores between high intenders (n=576) and low intenders (n=434), for the various dependent variables included in this study.

Variable name and items	High intenders		Low intenders		F	Cohen's d
	Mean	SD	Mean	SD		
Attitude towards MHS	6.61	0.59	6.30	1.10	34.10**	.35
Delivering at home helps reduce labour complications (recoded).....	6.59	0.99	6.16	1.57	28.34**	.33
Delivering at the clinic helps reduce labour complications.....	6.64	0.68	6.28	1.20	37.25**	.37
Attending ANC and PNC helps reduce pregnancy and labour complications.....	6.62	0.71	6.46	1.01	7.96*	.18
Attitude towards nurses	5.51	1.10	4.60	1.25	151.42**	.77
Nurses are caring to the mothers during ANC and labour...	5.15	1.75	3.68	2.14	147.65**	.75
Nurse-midwives show respect towards mothers during ANC and delivery.....	4.08	2.22	2.90	2.07	74.33**	.55
When attending to mothers during labour, nurses show enough skills and care to avoid labour complications	6.42	0.93	5.78	1.34	77.10**	.55
Nurses at the clinic provide mothers with quality services	6.42	0.94	6.01	1.27	33.12**	.37
Attitude towards TBAs	5.74	1.03	6.11	1.00	33.65**	.36
Being delivered by TBAs is safer	5.17	1.39	5.66	1.47	28.34**	.34
Delivering with the help of TBAs leads to favourable mother and baby outcomes	1.85	1.66	1.59	1.49	6.32*	.16
TBAs show respect to the mothers.....	5.87	1.25	6.27	1.19	25.62**	.33
Perceived social norms regarding MHS use	5.47	1.68	6.08	1.17	41.51**	.42
Most pregnant women in my community do not start ANC visits early	5.66	1.75	6.14	1.33	22.50**	.31
Most women in my community delay ANC visits until the pregnancy is large enough	5.77	1.77	6.13	1.33	30.75**	.23
Most women in my community believe that it is not good to expose a young pregnancy to health centre staff	5.16	1.99	5.95	1.40	50.61**	.46

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Table 4 (Continued)

Variable name and items	High intenders		Low intenders		F	Cohen's d
	Mean	SD	Mean	SD		
Perceived social norms towards male nurse involvement	6.03	1.67	6.42	1.17	17.15**	.27
Most people in my community think that it is not appropriate for pregnant women to expose their nakedness to a male nurse....	6.00	1.87	6.46	1.30	19.66**	.29
Most people in my community think that it is embarrassing for a pregnant woman to be delivered by a male nurse...	5.93	1.86	6.44	1.26	23.47**	.32
Most of my friends think we should not be delivered by male nurses/midwives...	6.15	1.70	6.36	1.47	4.21*	.13
Personal norms	5.41	1.37	4.95	1.47	26.27**	.32
It is good to delay ANC until 6 or 7 months (<i>reversed</i>)	5.63	2.17	5.60	2.10	0.04	.01
It is embarrassing for a woman to be delivered by a male nurse (<i>reversed</i>)	4.28	2.33	3.27	2.30	46.45**	.44
I can deliver at home if I see that my friends have no complications (<i>reversed</i>)	6.35	1.34	5.94	1.62	19.14**	.28
Perceived Behavioral Control	5.26	0.98	3.92	1.04	439.33**	1.32
I am confident I can start ANC visits early at 3 or 4 months....	5.95	1.42	4.49	1.76	210.55**	.91
I am confident can go to the clinic early enough and stay in the mother's shelter as I wait for labour.....	5.51	1.77	3.60	1.92	264.49**	1.03
I am confident I can decide go the clinic without consulting others.....	4.33	0.83	3.70	1.04	110.76**	.67

Discussion

The aim of the current study was to highlight personal and environmental factors influencing the decision to use maternal healthcare services among pregnant women in Kalomo, Zambia. Overall, most respondents reported a high intention to use maternal healthcare services in future pregnancies. Moreover, we found positive associations with intention for measures of attitude, personal moral norm and perceived behavioural control towards maternal healthcare service use, and levels of education. In contrast, intention was negatively associated with perceived social norms, mother's age, number of children, and distance to the nearest clinic. Regression analyses revealed that these variables together accounted for 41.8% of the variance in intention, with perceived behavioural control being the strongest predictor of intention, followed by geographical distance to the nearest health centre and perceived social norm towards male nurses/midwife involvement.

These findings confirm findings from an earlier qualitative study (Sialubanje *et al.*, 2014) in which we also identified women's perceived behavioural control as one of the most important factors influencing mothers' intention to use healthcare services. These findings are also comparable with an Iranian study (Hajian *et al.*, 2013) which showed that self-efficacy (identical to perceived behavioural control) (Fishbein & Ajzen, 2010; Cohen *et al.*, 2003) was the strongest predictor of the mother's intention to use delivery services. The current finding suggests that, although most respondents reported relatively high intention to go to the health centre to give birth, they perceived several internal and external barriers which made them likely to perceive less control over the intended behaviour. Indeed, examination of the differences between low and high intenders confirmed that low intenders experienced more barriers to use the services. Thus, these findings suggest that improving women's perceived behavioural control could significantly raise women's intentions to use maternal healthcare services.

Interestingly, our findings further show that external barriers, such as long distances to the nearest health facility have a direct and negative influence on women's decision to use maternal healthcare services in the future. This finding is important as it confirms the independent negative effect external barriers may have on both intention and behaviour and it indicates that their strong effect may not be solely explained through people's beliefs of personal control over the behaviour. Again, this finding is consistent with our earlier study (Sialubanje *et al.*, 2014) as well as with several other studies (Thaddeus & Maine, 1994; Mpembeni *et al.*, 2007; Gabrysch & Campbell, 2009; Gage, 2007; Gabrysch *et al.*, 2011; Stekelenburg *et al.*, 2004). For example, women in Tanzania who lived far from health facilities were four times less likely to deliver in a health facility than women living close to the facility (Mpembeni *et al.*, 2007: 12). Indeed, in their ground-breaking study, Thaddeus and Main (1994) stressed the importance of distance in preventing women from seeking healthcare and concluded that distance was not only an obstacle to accessing healthcare, but also a disincentive to optimal healthcare use. These authors further stressed that this negative effect becomes stronger when combined with lack of transportation and a poor road network such as is the case in the large parts of Zambia. Together, our findings stress the need for public health interventions to focus on mitigating these physical barriers and indirect costs.

Consistent with predictions from the Reasoned Action Approach (RAA) (Fishbein & Ajzen, 2010) and the results from previous studies (Stekelenburg *et al.*, 2005; Titaley *et al.*, 2010; Lubbock & Stephenson, 2008), our findings showed that perceived social norms are a significant predictor of behavioural intention and that they constitute an important psychosocial barrier for mothers using maternal healthcare services. Indeed, our results indicate that, specifically, normative beliefs towards maternal healthcare service use and towards male nurse involvement are negatively associated with intention to use maternal healthcare services, suggesting that respondents who perceived negative attitudes towards service use from friends and important others indicated a lower likelihood to use the services in future pregnancies. Moreover, our findings showed that perceived social norms

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were positively related with mothers' age and number of children, suggesting that older women perceive more social pressure against being delivered by male nurse or midwives than the young mothers. These beliefs, in turn, negatively influence women's decision to deliver at the health centre – which could be the reason for our earlier finding (Sialubanje *et al.*, 2014) that older women fail to make decisions to go and deliver at the health centre, because they insist on first consulting important referents, including TBAs. Thus, our findings confirm the importance of social norms in motivating women to use maternal healthcare services when pregnant. These findings fit in with research by, for example, Stekelenburg and colleagues in Kalabo, Zambia (Stekelenburg *et al.*, 2005) and by Titley and colleagues (2010) in Indonesia. These authors also revealed the importance of the role of the family and community in a woman's decision to seek healthcare services.

The current findings also showed that attitude did not uniquely predict intention. Thus, we did not find quantitative support for our previous findings (Sialubanje *et al.*, 2014) which showed that mothers' (negative) attitude towards nurses and the quality of services negatively influenced their decision to use these services. In addition, the current finding is also not consistent with previous studies (Kafulafula *et al.*, 2012; Edmonds *et al.*, 2012; Hazemba & Siziya, 2008) which found that attitude predicted mother's intention to use maternal healthcare services. The reason for the insignificant finding is not clear. Our analyses showed a moderate positive univariate association between mother's intention and attitude towards nurses, as well as large effect sizes when testing the differences in mean scores on attitude measures between low and high intenders, suggesting an important role attitude plays in influencing mother's intention to use the services. Thus, our finding may not be conclusive on the unique effect attitude has on mother's intention and may suggest a complex relationship between attitude and co-associations with other RAA predictors. Our univariate analysis, nevertheless, suggests that programmes influencing attitudes are likely to motivate pregnant women to use the services.

Past healthcare-seeking behavior and socio-demographic variables did not uniquely predict intention to use the services. This finding is not surprising as it is consistent with RAA (Fishbein & Ajzen, 2010) which postulates that socio-demographic variables and past behaviour do not have a direct effect on behavioural intention. Rather, their effect is accounted for by attitude, perceived social norms and perceived behavioural control—the model's proximal antecedents of behavioural motivation (Fishbein & Ajzen, 2010). However, our findings are in contrast with other studies (Ochako *et al.*, 2011; Babalola & Fatusi, 2009; Mrisho *et al.*, 2007; Choulagai *et al.*, 2013; Hazemba & Siziya, 2008; Adewemimo *et al.*, 2014; Engmann *et al.*, 2013) which reported that past behaviour (that is, antenatal care use and place of delivery during the previous pregnancy) as well as mother's age and level of education, independently predicted mother's likelihood to use delivery services in the future.

Limitations

A number of potential limitations to our study should be noted. First, our findings are based on interviewer-administered questionnaires. The interviewees' responses may have been influenced by the interviewer's presence, the manner in which the questions were posed, or indeed the use of male interviewers. The use of male interviewers may be of concern, especially in the rural Zambian culture where men play a dominant role in decision-making and consequently some women may not have felt free to express their opinions. Moreover, in Zambia, issues to do with sexuality and childbirth are not easily discussed between people of the opposite sex or between individuals of different ages. This may have prevented some women – especially the older ones – from freely expressing their opinions. In addition, the cross sectional design of our study made it not possible to identify causal relationship between intention and the hypothesised predictor variables from the RAA model. Finally, since the focus of our study was on only one rural district in Zambia, these respondents may not represent the views of all the mothers of reproductive age in Kalomo district, nor all of rural Zambia. However, despite these limitations, we believe that, based on our large sample size (n=1007), our study had enough power to detect any important effects present in the study population. Indeed, as can be seen from our findings, they are comparable to those of other previous studies in the region as well as the recent DHS (CSO, 2009).

Implications

To sum up, our findings confirm the previously reported low maternal healthcare utilization rates in rural Zambia and highlight important personal and environmental factors influencing decisions to use these services among pregnant women in Kalomo district. Our findings suggest that perceived behavioural control, perceived social norms and physical barriers such as distance are the most important and unique predictors of intention which, thus, should be targeted in systematically developed future interventions to promote the use of maternal healthcare services.

Bartholomew and colleagues' Intervention Mapping approach (Bartholomew *et al.*, 2011) provides such a systematic approach to the design of evidence-and theory-based behaviour change programmes. In the current study context, there is particular need to increase women's abilities in dealing effectively with negative social pressure from the important referents regarding maternal healthcare use and the various financial and logistical challenges such as lack of money for transport, baby clothes, as well as money for food while waiting for delivery at the clinic. These barriers can be targeted for intervention. Providing mothers with requisite skills and resources could positively influence the intention to use maternal healthcare services at the clinic and could also assist mothers to act on their intentions.

Finally, our findings suggest a need for further research. First, since the current study focused mainly on identifying barriers to service use, we recommend a study that will focus on those women who are using the services and to identify the determinants of service utilization among this group which could provide additional starting points for

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interventions. Furthermore, we recommend a study to explore reasons why most women deliver at home, assisted by TBAs. Together, with the current study, these future studies can provide an evidence base for a more focused and highly needed policy to improve the use of maternal healthcare services in rural Zambia.

Chapter 4

Reasons for home delivery and use of traditional birth attendants in rural Zambia: a qualitative study

Published as:

Sialubanje C, Massar K, Hamer DH, Ruiters RAC. (2015) Reasons for home delivery and use of traditional birth attendants in rural Zambia: a qualitative study. *BMC Pregnancy and Childbirth*; 15:216

Abstract

Despite the policy change stopping traditional birth attendants (TBAs) from conducting deliveries at home and encouraging all women to give birth at the clinic under skilled care, many women still give birth at home and TBAs are essential providers of obstetric care in rural Zambia. The main reasons for pregnant women's preference for TBAs are not well understood.

This qualitative study aimed to identify reasons motivating women to give birth at home and seek the help of TBAs. This knowledge is important for the design of public health interventions focusing on promoting facility-based skilled birth attendance in Zambia. We conducted ten focus group discussions (n=100) with women of reproductive age (15-45 years) in five health center catchment areas with the lowest institutional delivery rates in the district. In addition, a total of 30 in-depth interviews were conducted comprising 5 TBAs, 4 headmen, 4 husbands, 4 mothers, 4 neighborhood health committee (NHC) members, 4 community health workers (CHWs) and 5 nurses. Perspectives on TBAs, the decision-making process regarding home delivery and use of TBAs, and reasons for preference of TBAs and their services were explored.

Our findings show that women's lack of decision-making autonomy regarding child birth, dependence on the husband and other family members for the final decision, and various physical and socioeconomic barriers including long distances, lack of money for transport and the requirement to bring baby clothes and food while staying at the clinic, prevented them from delivering at a clinic. In addition, socio-cultural norms regarding childbirth, negative attitude towards the quality of services provided at the clinic, made most women deliver at home. Moreover, most women had a positive attitude towards TBAs and perceived them to be respectful, skilled, friendly, trustworthy, and available when they needed them. Our findings suggest a need to empower women with decision-making skills regarding childbirth and to lower barriers that prevent them from going to the health facility in time. There is also need to improve the quality of existing facility-based delivery services and to strengthen linkages between TBAs and the formal health system.

Introduction

Zambia is one of the sub-Saharan African countries with a high maternal mortality ratio (MMR) (CSO, 2009; WHO, 2014). The latest demographic and health survey (DHS; CSO, 2009) showed that the country's MMR is 591 maternal deaths per 100 000 live births. Moreover, more than half (53%) of the women in Zambia, do not receive skilled birth attendance. The survey (CSO, 2009) further shows that these numbers are even higher in rural areas where more than seventy percent of the women give birth at home, outside the health facility, and are often assisted by TBAs (CSO, 2009).

The World Health Organization (WHO) has defined TBAs as persons who assist the mother during childbirth and learn her skills through apprenticeship that involves both observation and imitation, and is often highly regarded by the community that chooses her to assist women in childbirth (WHO, 1992). Reviews (Lassi *et al.*, 2010) and studies conducted in Zambia (Gill *et al.*, 2011) and other developing countries (Miller *et al.*, 2012; Nyamtama *et al.*, 2011) have reported the effectiveness of TBAs in improving maternal and newborn health outcomes. For example Gill and colleagues (2011) showed that training TBAs to manage common perinatal conditions significantly reduced neonatal mortality in Lufwanyama, Zambia.

Although training TBAs may provide them with basic midwifery skills, most TBAs have no access to the requisite clean delivery tools such as supply of drugs and equipment for obstetric care (Gill *et al.*, 2011); this may increase the risk for infections during childbirth. Moreover, the TBAs have no access to referral services to the hospital in case of complications during and after labour (WHO, 2005).

Consequently, there has been a policy change in many developing countries – including Zambia (MOH, 2008) to stop the funding and training of TBA programmes. Rather, all women are recommended to use facility-based delivery services provided by trained and skilled healthcare staff (WHO, 2005). This change in policy has resulted in TBAs not being recognised as part of the providers of essential obstetric care in Zambia (MOH, 2008). Nevertheless, many women in rural Zambia, still give birth at home and TBAs are essential providers of obstetric care (CSO, 2009; Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b).

There is a lack of evidence on the main reasons for home delivery and use of TBAs. Currently, most published studies investigating reasons for home delivery in Zambia (Stekelenburg *et al.*, 2004; Gabrysch *et al.*, 2011) and other developing countries (Kawakatsu *et al.*, 2014; Thaddeus & Maine, 1994; Gabrysch & Campbell, 2009) have focused on the structural barriers to facility delivery services such as lack of geographical access to emergency obstetric care and financial limitations. Factors that motivate women to give birth at home and their reasons to seek the assistance of TBAs have not been explored in depth. One qualitative study conducted in Zambia (Sialubanje *et al.*, 2014a) showed that perceived poor quality of MHS due to negative staff attitudes towards pregnant women, a shortage of qualified staff and a lack of drugs and supplies necessary for emergency obstetric care, social and cultural norms, women's low social status and lack of decision-making autonomy

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prevented women from utilising facility delivery services in rural Zambia. Similarly, Titaley (2010) and colleagues in Indonesia showed that the community had positive attitude towards TBAs and perceived their role as essential for providing maternal healthcare services (MHS). Women preferred services of the TBAs because they were available and easily accessible, affordable and pragmatic. Moreover, the community believed that TBAs had enough midwifery knowledge, skills, and that they were trustworthy. However, these factors may differ from one socioeconomic, cultural and geographic context to another, and may not be applicable to Zambia. Thus far, however, no studies have explored factors that influence women's decision to give birth at home in rural Zambia, and reasons to seek the assistance of TBAs are not yet explored in-depth.

The purpose of this study, therefore, is to gain a better insight into women's reasons to give birth at home and their preference for TBAs. Knowledge about these factors is important for the design of public health interventions focusing on promoting institutional deliveries and ultimately, improving maternal and newborn health outcomes in Zambia.

Methods

Study area

This qualitative study was conducted in Kalomo district, Zambia (for details on the district profile see Sialubanje *et al.* (2014a) and used focus group discussions (FGDs) and in-depth interviews (IDIs) as data collection methods. We conducted both FGDs and IDIs in order to provide a detailed understanding of the factors under investigation. The Tropical Diseases Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia granted ethical approval.

Study population and sampling

Study participants were purposefully selected from five rural health centre (RHC) catchment areas with the lowest institutional delivery rates in the district, and comprised 100 women of reproductive age (15 to 45 years) who had given birth within one year prior to the study. These participated in the FGDs. In addition, the study included 30 IDI participants comprising 5 traditional birth attendants (TBAs), 5 nurse-midwives, 4 women, 4 husbands, 4 headmen, 4 neighbourhood health committee (NHCs) members, and 4 community-health workers (CHWs) aged between 20 and 45 years.

Selection of participants and study area (villages) was done in three stages using a purposeful homogeneous sampling technique which focuses on a subpopulation and area in which the respondents share similar characteristics. This sampling technique, in turn, helps the researcher to understand and describe something about a particular group in depth (Varkevisser *et al.*, 2003; King and Horrocks, 2010). In addition, this sampling technique allowed for selection of respondents with similar experience regarding childbirth and utilization of MHS, while, at the same time, allowing for recruitment of respondents with

different characteristics in terms of their age, number of children, marital status, and education level, which helped provide insight into the similarities and differences in their experiences.

To begin with, six RHCs with the lowest MHS utilization rates in the district were purposefully selected with assistance from the District Medical Office. Next, two villages from the list of villages in each RHC catchment area were purposefully selected in consultation with local health centre staff and NHC members, giving a total of twelve villages. Village headmen and NHC members from the selected villages were then informed about the study and were requested to communicate the study and its purpose to their community members. This was done through the routine community meetings. Community members who were willing to participate in the study were requested to come to an agreed-upon place (normally the home of the headman) in the village for the interview on a date set by the research team.

All the women of reproductive age, aged between 15 and 45 years within the selected villages, and who had given birth one year prior to the survey, were eligible to participate in the FGD. Women aged below 15 and above 45 years were excluded from participation. In addition, women who had resided in the area for less than six months were also excluded because the investigators thought these women would not have had enough local experience on maternal health challenges and available resources.

A total of ten (10) FGDs were conducted, two in each health centre catchment area, one per village. After these 10 focus group discussions, data saturation was achieved, and two additional planned FGDs were not conducted.

In addition, to further obtain perspectives and experiences regarding the issue under investigation, a total of 30 IDIs with individuals assumed to represent the different subgroups and positions in the community were conducted. The IDIs comprised 5 TBAs, 4 headmen, 4 NHC members, 4 CHWs, 4 husbands, 4 mothers and 5 nurse-midwives. We purposefully selected three (3) key informants from each of the ten (10) villages under the five RHC catchment areas included in the study.

To be eligible to participate in the study, IDI participants should have been aged between 20 and 45 years. In addition, participants should have had resided in the area for more than six months; those who had resided in the area for less than six months were also excluded because of the reasons stated above.

Data collection

Both FGDs and IDIs were conducted in the community by two trained research assistants. One research assistant facilitated/conducted the FGD/interview, while the second one recorded the session using a digital voice recorder. Both FGDs and IDIs were conducted in the local language, Tonga. To ensure privacy and confidentiality, each FGD and IDI was conducted in a quiet place, normally under a tree. .

Before each FGD and interview, written consent was obtained from participants by requesting them to read and sign the consent form, which was translated into Tonga. Next,

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each respondent was asked to complete a short demographic questionnaire. For those who could not read, research assistants read the consent form and the questionnaire and filled it in. We did not obtain prior parental consent for the minors included in the study because we had obtained ethical approval for the study from the Tropical Diseases Research Centre (TDRC) Ethics Review Committee and the Ministry of Health Research and Ethics Committee (MoH REC) in Zambia. Both bodies granted ethical approval for the respondents aged between 15-17 years who had given birth one year prior to the study to participate in the FGDs without explicit parental consent. This approval was based on the fact that women who are married or are emancipated have the right to make their own decisions under the Zambian customary law, and this includes those aged 15 years and older. Moreover, the FGD participants were recruited by the village headmen who are considered as consent-providers under the Zambian customary law. Furthermore, both in the recruitment and during the FGDs, it was stressed that participation was completely voluntary and that participants' answers would be treated confidentially and anonymously.

A semi-structured interview guide translated into Tonga, was used for both FGDs and IDIs. The main topics explored included perspectives on home delivery and use of TBAs, decision-making processes regarding use of MHS, and reasons for home delivery and use of TBAs. The interview guide was used for both FGDs and IDIs. IDI participants were mainly asked to share their experiences regarding the topic under discussion and provide more insight into the subject.

Each FGD was conducted in a quiet place in each village and lasted between 1 and 1.5 hours. In order to allow for free discussions among the participants, the FGDs were arranged into two groups, according to age: women aged between 15 and 19 years and those aged above 20 years. Each FGD consisted of 8 to 12 participants.

Data analysis

All voice recordings from FGDs and interviews were transcribed and translated into English by research assistants. To check for accuracy, some (20%) of the transcripts were back translated into Tonga. Members of the research team then compared the Tonga and English versions for differences and similarities while listening to the original voice recording. After verification of accuracy in translation, each transcript was then read aloud by a research assistant while the other team members were listening to the corresponding voice recording. Next, each translated transcript was compared with the hand-written field notes that the research assistants had prepared during the FGDs and interviews. After proof-reading and making corrections, the transcripts for both FGDs and IDIs were saved on a password-protected computer. The word documents were then exported into QSR (NVivo 9.0 software) for processing.

An inductive approach to data analysis was used, guided by three questions based on the three pre-determined themes: 1) What are the women's perspectives on home delivery and use of TBAs? 2) How is the decision on the place of delivery made? and 3) Which factors influence the decision to give birth at home and use TBAs? In order to determine similarities

and differences in the responses, findings for the FGDs and IDIs were analysed separately. We computed percentages of respondents' demographic characteristics using IBM SPSS Statistics version 21 and the results are shown in Table 1.

Ethical approval

Ethical approval was obtained from the Tropical Diseases Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia.

Results

Demographics

A total of 130 respondents participated in the study. Of the 100 FGD participants, 35 (35%) were aged between 15 and 19 years, 50 (50%) between 20 and 34 years, and 15 (15%) were aged between 35 and 45 years. Of the 30 key informants, 10 (33.33%) were aged between 20 and 34 years, 12 (40%) were aged between 35 and 45 years, and 8 (26.67%) were aged above 45 years. All the FGD respondents were female, while 16 (53.33%) of the IDI respondents were female and 14 (46.67%) were male. The majority (73.08%) of the FGD respondents were married, 15% were single, 10% were widowed, and 5% were divorced. The majority of the IDI respondents (93.33%) were married and only 2 (6.67%) were single and included 5 (16.75%) TBAs, 5 (16.75%) nurse-midwives, 4 (13.3%) women, 4 (13.3%) husbands, 4 (13.3%) headmen, 4 (13.3%) NHCs members, and 4 (13.3%) CHWs. Half (50%) of the FGD respondents had between 3 and 5 children, 25% of them had either 1 or 2 children, and the other 25% had 6 or more children. Half (50%) of the IDI respondents had between 6 and more children, 40% had between 3 and 5 children and 10% had either 1 or 2 children. About half (48%) of the FGD respondents had upper primary school education, a quarter (25%) had junior secondary school education, 10% had senior secondary school education, 7% had never attended school and 10% had lower primary school education.

Half (50%) of the IDI respondents had upper primary school education, 20% had junior secondary school education, 13.3% had senior secondary school education and 16.7% had tertiary education. The majority (75%) of FGD and IDIs (83.3%) respondents were farmers and earned less than 20 US dollars per month, while 16.7% of the IDI respondents were in formal employment and earned more than 200 US dollars per month. The majority (53%) of the FGD respondents had given birth at home during their previous pregnancy, while 3 out of the 4 mothers (75%) IDI respondents had given birth at the clinic (see Table 1).

Theme 1: Perspectives on home delivery and use of Traditional Birth Attendants

This theme focused on IDI and FGD respondents' perspectives on home delivery and use of TBAs and their services. Overall, all IDI and FGD respondents were aware of the TBAs in their communities. One IDI respondent described them as follows:

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“TBAs are women who live with us in the community. They were trained as nurses, but they are not nurses; they are women who were trained so that they help women from their villages during labour” (35 year old IDI respondent/CHW)

Moreover, most IDI and FGD respondents had a positive attitude towards TBAs and their services. Exceptions were the 75% young FGD respondents and 25% old FGD respondents with one or two children). Respondents who had a positive attitude towards TBAs explained that TBAs were very important and helpful because they assisted women during labour in their communities. In addition, TBAs played an important role in providing health education and antenatal care (ANC) services in designated health posts in the community. Furthermore, TBAs conducted deliveries in the women’s homes.

Table 1: Background characteristics of the participants in the in-depth-interviews (IDIs) and the Focus Group Discussions (FGDs).

Characteristic	IDIs (n=30) n (%)	FGDs (n=100) n (%)
Age (years)		
15-19	0 (0%)	35 (35%)
20-34	10 (33.33%)	50 (50%)
35-45	12 (40%)	15 (15%)
Above 45	8 (26.67%)	
Sex		
Male	14 (46.67%)	0 (0%)
Female	16 (53.33%)	100 (100%)
Marital Status		
Single	2(6.67%)	15 (15%)
Married	28 (93.33%)	70 (70%)
Divorced	0 (0%)	5 (5%)
Widow	0 (0%)	10 (10%)
Number of children		
1-2	3 (10%)	25 (25%)
3-5	12 (40%)	50 (50%)
6 and above	15 (50%)	25 (25%)
Cadre		
TBA	5(16.75%)	-
Village headman	4(13.3%)	-
NHC members	4(13.3%)	-
CHWs	4(13.3%)	-
Husbands	4(13.3%)	-

Table 1 (Continued)

Characteristic	IDIs (n=30) n (%)	FGDs (n=100) n (%)
Women	4(13.3%)	-
Nurse-midwives	5(16.75%)	-
Level of Education (years)		
None	0 (0%)	7 (7%)
Lower primary (1-4)	0 (0%)	10 (10%)
Upper primary (5-7)	15 (50%)	48 (48%)
Junior secondary (8-9)	6 (20%)	25 (25%)
Senior Secondary (10-12)	4 (13.3%)	10 (10%)
Tertiary	5 (16.7%)	0 (0%)
Occupation		
Unemployed	0 (0%)	15 (15%)
Farmer	25 (83.3%)	75 (75%)
Self-employed	0 (0%)	0 (0%)
Formal employment	5 (16.7%)	10 (10%)
Level of income (\$)		
<20	15(50%)	65 (65%)
20-49	10 (33.3%)	25 (25%)
50-99	0 (%)	10 (10%)
100-199	0(%)	0 (0%)
>200	5 (16.7%)	0 (0%)
Place of delivery of youngest child		
Clinic	3 out of 4 mothers (75%)	47(47%)
Home	1 out of 4 mothers (25%)	53(53%)
On the way to the clinic	0 (0%)	0(0%)

Moreover, all the five nurses participating in the IDIs explained that TBAs were still needed because of poor staffing levels in the rural areas. They revealed that in some RHCs, TBAs assisted nurses to provide ANC services and to conduct deliveries.

Concerning their training, four (4) out of the five (5) TBAs mentioned that they were trained by staff from the district medical office (DMO). They also explained that some of their colleagues were trained by other organizations such as World Vision International (WVI) and the Churches Health Association of Zambia (CHAZ). In contrast, one TBA mentioned that she was not trained. Furthermore, all the five argued that, although most of the TBAs in their communities were trained, some of them were not. Rather, they got the knowledge and skills from the old women in their communities.

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“We were trained by the Ministry of Health a long time ago. They trained us on how to examine the mother during pregnancy, conduct deliveries and protect the baby. Our training used to take six weeks. The people from the district used to train us, but now they have stopped” (45 year old traditional birth attendants)

All the IDI and FGD were aware of the new policy that stopped the training of TBAs. They explained that the new policy also recommended that TBAs stop conducting deliveries and that all women should give birth at the clinic under the supervision of a trained and skilled health staff such as a nurse, midwife or doctor. Moreover, the new policy stopped nurses at the clinic from providing TBAs with delivery packs and other supplies. With the change in policy, TBAs were advised to work with headmen and other community health agents such as NHC members, CHWs, and safe motherhood action groups (SMAGs) to encourage pregnant women to attend ANC services and give birth at the clinic. In contrast, all the FGDs and IDI respondents with the exception of five 5 TBAs argued that many women in their communities still give birth at home, and that TBAs still conduct deliveries.

“Yes, the new rule is there and many women know about it, the nurses tell them at the clinic. We also tell them during our community meetings. But we see that many of them still deliver at home” (36 year old headman)

However, the five TBAs argued that, because of the new policy, they had stopped conducting deliveries in their communities. They explained that if called upon to assist a woman in labour at home, they would advise the family to find transport to take the woman to the clinic. Moreover, they explained that they accompanied the pregnant woman to the clinic. Furthermore, TBAs indicated that they only conducted deliveries at home in an “emergency situation” in order to prevent the woman from delivering on the way to the health centre.

Concerning the group of women who gave birth at home, respondents had mixed feelings. A quarter (25%) of the FGD respondents (mainly the older mothers with six or more children) mentioned that both the older and younger women gave birth at home. They explained that, although most old women with many children gave birth at home, a large proportion of teenage girls also gave birth at home, because they were either not sure of the date of delivery or they did not inform their parents about the pregnancy, and thus, did not prepare for childbirth at the clinic.

In contrast, some FGD respondents (mainly those with one or two children) and all the IDI participants revealed that older women with many children were the ones who gave birth at home with the help of TBAs, mothers, neighbours, and friends. They explained that such women believed that they had enough experience with childbirth and knew whether they would develop complications or not. In contrast, they explained that young and inexperienced women and those who were at risk for complications gave birth at the clinic. Furthermore, those identified by nurses during ANC visits as being at risk of developing complications and those who had experienced complications during previous deliveries

were more likely to give birth at the clinic. In addition, respondents explained that most women (both young and old) who were told that they had no complications during ANC (i.e., that the baby was lying well in the womb) ended up giving birth at home. They explained that, despite going for ANC at the clinic and being advised by nurses to give birth at the clinic, most old pregnant women with many children did not return.

Theme 2: Decision-making process regarding the place of delivery and use of Traditional Birth Attendants

This theme focused on the decision-making process regarding home delivery and use of TBAs. Respondents had mixed feelings regarding women's decision to give birth at home. They explained that families differed on who made the final decision. All the IDI respondents (except husbands) and most (70%) old FGD respondents mentioned that the final decision whether the pregnant woman should go to deliver at the clinic or not was made by the husband.

“The husband is the one who decides. We normally sit down with them to discuss, but they make the final decision. Some women decide alone” (36 year old mother)

In contrast, all the four husbands and most (60%) of the old FGD respondents with many children argued that women made the decisions themselves, based on their past experience with childbirth and whether they had enough money to buy things that were needed at the clinic. They only informed the husband about it.

Most young FGD respondents and some of the old FGD respondents (with few children) argued that young women and those without experience in childbirth consulted their parents for the place of delivery. Moreover, most young mothers mentioned that they followed advice from the nurses at the clinic.

Regarding the decision to seek the services of the TBAs, all FGD and IDI respondents mentioned that when women went in labour at home, they would inform their husbands to call the TBA to come home. If the husband was not home, the woman would ask her children, neighbours or parents to call the TBA.

“When a woman is not feeling well, she sends her husband to go and call the TBA so that she assists her. If her husband is not there, she sends her children or her neighbours” (35 year old FGD participant)

Theme 3: Reasons for home delivery and use of Traditional Birth Attendants

This theme focused on the reasons for home delivery and use of TBAs. Our findings show that various personal, family and health-related factors as well as social and cultural norms played an important role in influencing women to give birth at home and to seek the services of TBAs.

Personal factors

Low Risk Perception. Low risk perception regarding their personal susceptibility to pregnancy and labour complications was one of the main reasons why most old women with many children delivered at home. Most respondents explained that although most old mothers were aware of the severity of labour complications, most of them believed that, compared to other [younger] women, their personal susceptibility to pregnancy and labour complications was low and that they were not personally at risk of developing such complications, because of their experience with childbirth. Moreover, most (60%) old FGD respondents (both those who had delivered at the clinic and those who had delivered at home) believed that they “knew themselves” pretty well because they had many successful deliveries in the past. In addition, they believed that they had enough experience giving birth and that they were able to recognise any possible complications that might arise during labour.

In contrast, most (80%) young FGD respondents and a few old ones (mainly those who had given birth at the clinic), and all the midwives and NHC members explained that most young women delivered at the clinic because they had no experience giving birth and that they were scared of labour complications if they gave birth at home.

“Most women with many children do not even worry about developing labour complications because they believe that they are used to it, and that they know themselves that they do not face problems when giving birth. They say that even if I experience problems, they will call the TBA or give me some herbs to drink; and then I will deliver” (20 year old FGD respondent/mother)

Negative attitude towards nurses

All IDI respondents (except nurses) mentioned that most women who gave birth at home had a negative attitude towards nurses and the healthcare services because of the way they were treated during ANC care or during the previous deliveries at the clinic. In confirmation, most (80%) old FGD, a quarter (25%) of the young FGD respondents and most IDI respondents including all the mothers, NHC members and CHWs mentioned that nurses at the clinic were harsh to the women in labour and used abusive language to them.

Regarding their experience during childbirth at the clinic, women had mixed feelings. Five women including four (4) old FGD respondents, one (1) young FGD respondent with two children, and one (1) woman with one child participating in the IDI, who had given birth at the clinic during their previous deliveries, explained that nurses cared for them and saved their lives after they developed labour complications such as excessive bleeding, retained placenta and eclampsia (high blood pressure, severe headache and fitting). In contrast, twenty (20) out of the fifty (50) old FGD respondents (40%) who had delivered at the clinic complained that during their previous deliveries at the clinic, nurses either shouted at them, left them to struggle alone in labour or did not assist them and their babies after labour.

Strikingly, all the husbands had a positive attitude towards nurses, whereas TBAs avoided commenting on the issue. Nurses explained that most clinics did not have enough staff to attend to the women in labour and those with general medical conditions.

Family-related factors. Dependence on the husband for financial support and decision-making was seen as one of the main reasons preventing women from giving birth at the clinic. The husband was perceived as the most important person in the decision-making process and his decision was usually final and most pregnant women would accept it.

All IDI respondents (except husbands) and most FGD respondents (both old and young) mentioned that pregnant women depended on their husbands as the provider. If the husband did not have enough money to provide for his wife, he would either delay making the decision to allow the wife to go to the clinic or stop her all together. In this case, she would deliver at home.

In contrast, all the husbands participating in the IDIs argued that men in their communities did not stop their wives from delivering at the clinic. Rather, they encouraged and supported them to do so.

“Most women fail to go to deliver at the clinic because of their husbands. They depend on their husbands to allow them” (43 year IDI participant/NHC member)

Health system-related factors. All the FGD respondents and all the IDI participants indicated that most women gave birth at home because they perceived various barriers preventing them from delivering at the clinic. The main barriers cited included lack of funds for baby clothes and requirements for the mother during and after labour, poor quality of services at the clinic due to non-availability of nurses, negative experiences with nurses during ANC visits or delivery during their previous pregnancies, long distances to the clinic and high transport costs, poor state of labour wards and absence of maternity waiting homes (MWHs), where it was present, it was in deplorable state. Other barriers included lack of funds for food for the pregnant woman while waiting for labour at the MWH.

In contrast, all IDI respondents (except husbands) argued that some families did not prepare for childbirth and that many husbands did not support their wives to find resources to use when staying at the clinic, waiting for delivery.

Social and cultural norms. All the IDI respondents (except husbands), and some (40%) of the FGDs respondents (both young and old with few children) mentioned that, especially old women with many children delivered at home because they believed that they should not be delivered by either a young nurse or a male staff at the clinic. They explained that most women were aware of the kind of nurses they would meet at the clinic – a young or old nurse, or a male one – and should there be a young or male nurse, some women would stay away and deliver at home, assisted by TBAs who were female and could be about their own age or older. In addition, young teenage and inexperienced women delivered at home

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accidentally because they were inexperienced with childbirth and did not know when they would go into labour.

Reasons for seeking the assistance of the TBAs

Our findings show that pregnant women's positive attitude towards TBAs was one of the main reasons why most of them preferred the services provided by TBAs.

Trust in traditional birth attendants. One of the main reasons for seeking the services of the TBAs was the trust women had in them. All IDIs respondents (except nurses and TBAs) and most (70%) FGD respondents (mainly old mothers) explained that women were happy with TBAs because they were always and immediately available when they were called upon to assist the woman in labour. They explained that, in contrast with nurses who were perceived as being absent from the clinics, TBAs would rush to the woman's home to assist as soon as they received the message, regardless of the time of the day or weather conditions. This trust in the TBAs' availability made most old women choose to stay at home rather than travel to the clinic where they would not find the help they needed.

Moreover, all the IDI respondents (except nurses and husbands) and 60% of the FGD respondents (both young and old respondents) explained that in some instances, women who decided to go to the clinic to deliver did not find nurses to assist them. Rather, they ended up being assisted by the accompanying relatives or call the TBA from the community to assist them; some women ended up going back home and call the TBAs to assist them.

"If you are not feeling well, you just send someone to call the traditional birth attendant to come and deliver you; she will come immediately and wait until you deliver. Whatever time you call her....even if it is raining, even at night she comes to help you" (36 year old mother)

In contrast, all the TBAs explained that, although they were available when called upon, they were overwhelmed with work. Similarly, most IDI respondents including headmen, husbands, and CHWs, and old FGD respondents indicated that, TBAs were few in the community, and they often had to walk long distances when called upon by women. They explained that if TBAs were not available, women received help from their parents, mothers-in-law or neighbours.

When probed why TBAs were so few, respondents gave varying answers. All the TBAs, NHC members, CHWs and headmen mentioned that some of the trained TBAs had left their villages and that they were not replaced due to the lack of training programmes stemming from the new health policy. In addition, respondents explained that some TBAs decided to become inactive because they never received any incentives or logistical support from the Ministry of Health. In addition, respondents explained that some TBAs decided to become inactive because they never received any incentives or logistical support from the Ministry of Health.

“We were trained by the district health office a long time ago, but now they have stopped training us. This has caused problems because we are now few. Like me I am alone here; I have to assist even women from the other villages because some TBAs have left their villages” (40 year old TBA)

Familiarity with traditional birth attendants. In addition to the trust in the TBAs, being familiar with TBAs was seen as one of the main reasons why women decided to use their services. Most IDI respondents including all the headmen, CHWs and NHC members and FGD respondents (especially the old women who had many children and had given birth at home) explained that women felt free with TBAs because they lived with them in the community – unlike nurses who were total strangers and sometimes shouted at the woman in labour. Moreover, women were free to discuss the progress of labour with the TBA and to inform her about how they felt about it – whether they needed food, water, or some rest. If a woman was not cooperative enough during labour, the TBA would not shout at her. Rather, she would encourage the woman to “push” so that the baby would not suffocate and die in the process. Respondents added that if a TBA noticed they were getting tired, she would ask them to “take a rest” and would either give some light porridge to eat or some *chibwantu* (local non-alcoholic drink) to drink. Moreover, women were also happy with the way TBA cared for them and their babies during and after giving birth.

“Most of us are free with the TBAs because we know them and we live with them. We are used to them. But for the nurses you find that you don’t even know each other (42 year old mother)

In contrast, most young FGD participants argued that some TBAs were harsh to the women in labour, and that they did not allow mothers to decide to go to the clinic in case of complications. Moreover, these respondents together with most IDI respondents (including nurses, CHWs, NHC members and three out of the four husbands interviewed) mentioned that TBAs did not transfer women with complications to the clinic in time.

Confidence in skills of traditional birth attendants. In general, most (70%) old FGD respondents (comprising older mothers) believed that TBAs had enough skills and experience to assist a woman during labour, child birth and that should labour complications occur, TBAs had enough skills to recognise them on time and refer the mother to the clinic. The main skills TBAs were believed to possess included: 1) carrying out an abdominal examination to assess the position and status of the baby during ANC; 2) carrying out an abdominal and vaginal examination to assess the stage and progress of labour; 3) cleansing the perineum to avoid infections during labour; 4) conducting the actual delivery, including cutting the cord and management of the third stage (delivery of the placenta) to prevent post partum haemorrhage; 5) detecting danger signs or complications, and deciding/ making a referral to the clinic. Furthermore, TBAs were believed to have skills to advise the

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mothers on cord care. They could assess if the cord stump was infected, and refer the baby to the clinic for medical attention.

Moreover, most old FGD respondents (both those who had given birth at home and at the clinic) explained that most old mothers had confidence in the skills of the TBAs because they had seen TBAs providing ANC services and conducting labour at the clinic, and that nurses had allowed them to do so. Some of the mothers had actually been attended to by TBAs during their previous delivery at the clinic. Thus, women with such an experience were reinforced in their beliefs about the TBAs' skills, and were more likely to decide to give birth at home in future pregnancies, and consult the TBAs for assistance.

“These same TBAs are the same ones who help us even at the clinic. They are able to assist us during labour and if you face difficulties she can examine you to see if the baby is alive. They are better than some nurses who refuse to help us because they say they are not trained in midwifery” (36 year old mother)

In contrast, all the IDI respondents and most young FGDs respondents and a few (25%) older mothers (who had given birth at the clinic during their previous pregnancies) argued that, despite their experience, some TBAs were not skilled or trained enough to handle labour complications at home. They explained that TBAs no longer received any logistical support from the health centres, and that they had no instruments or supplies to use in case of complications such as severe bleeding or eclampsia. Moreover, TBAs were believed to have no skills to recognise pregnancy and labour complications, and that sometimes they delayed referral of the woman to the clinic because they did not know when to do so. Furthermore, some young FGD respondents complained that TBAs delayed sending women to the clinic because they expected to receive an incentive in form of a chicken or an agreed-upon amount of money after conducting a successful delivery.

Moreover, IDI respondents including all the headmen, nurses and NHC members and most FGD respondents who had given birth at the clinic (both young and old) believed that, in case of labour complications, TBAs had no access to the referral services such as a reliable and readily available community transport to the clinic. In addition, they had no access to communications facilities such as good road network or mobile phone services to call for help and transfer the woman to the clinic or the district hospital in good time for further management.

Nevertheless, headmen, NHC members and CHWs, and most FGD respondents (both young and old) who had given birth at the clinic complained that many clinics in their communities had no ambulances. Most clinic staff relied on the ambulance from the district hospital which took long to arrive at the health centre when needed. Moreover, women with labour complications were transferred for long distances on bad roads to reach the district hospital for specialist care.

Discussion

In the current study we set out to investigate the reasons why women would decide to give birth at home rather than at a clinic, and how they viewed TBAs. To this end, we interviewed women and other key informants from the area, i.e. husbands, mothers, TBAs, headmen, NHC members, CHWs, and health workers in Kalomo, Zambia.

Consistent with previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Stekelenburg *et al.*, 2004) our findings suggest that most women in Kalomo district are aware of the presence of TBAs in the area and have a positive attitude towards them. They believe that TBAs play an important role in providing MHS to the women in the community including health education, ANC services and delivering services. Moreover, our findings show that, despite the policy change in Zambia stopping the training of TBAs and recommending that TBAs stop conducting deliveries at home, and that all women should give birth at a health facility under the skilled supervision of a qualified health personal such as a nurse, midwife or a doctor, many women still give birth at home and TBAs still play an important role in assisting them. These findings are consistent with our previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b) and studies from other developing countries (Titaley *et al.*, 2010; Paul & Rumsey, 2002) which reported that home delivery and use of TBAs were still being preferable for some women in rural areas. Our findings also suggest that, despite the need to have all women give birth under skilled care, public health strategies and policies need to take into consideration women who have no access to facility-based skilled delivery services in rural areas, and the consequences of denying them the very basic delivery services and benefits from a trained TBA. For example, lack of medical and logistical supplies to enable TBAs conduct clean deliveries may predispose women and their babies to the risk of infection during labour. Our findings provide important evidence for the debate in Zambia and many developing countries about whether the current policy on use of TBAs needs to change or not and suggest benefits to be gained from public health strategies involving TBAs as important partners in improving MHS in remote areas where their services are highly utilised.

Regarding the decision-making process on the place of delivery and use of TBAs, our study highlights important findings. Although most respondents believed that husbands are the main decision-makers, the four husbands in our sample denied making the final decisions for their wives; they believed that women make the decision and only inform the husband about it. Moreover, especially young couples consult their parents for the final decision. Furthermore, when considering calling for the services of the TBAs, women decide when the TBAs should be called home. When in labour, the woman will normally ask the husband to call the TBAs to come home and assist her. In the absence of the husband, children or neighbours will assist in calling the TBAs. This finding is important as it suggests as it is in contrast from previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2015a; Sialubanje *et al.*, 2015b; Speizer *et al.*, 2014), which suggested that husbands make the final decision whether the woman should deliver at home or not. Our finding suggests

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that pregnant women are also active participants in the decision-making process regarding their health seeking behavior, especially when it comes to the use of TBAs.

Consistent with previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Thaddeus & Maine, 1994; Gabrysch & Campbell, 2009; Titaley *et al.*, 2010), our findings show that various factors including individual, family-related, socio-cultural norms and health system-related factors influence women's decisions to give birth at home and seek the services of the TBAs. For example, our findings suggest that despite being aware about the risks associated with pregnancy and child birth, as well as their severity, and the risks involved in home delivery without a skilled birth attendant, most women do not believe that they are personally susceptible to the complications associated with childbirth and home delivery. This finding is consistent with other studies (Speizer *et al.*, 2014; Story & Burgard, 2012) which have shown the importance of perceived susceptibility as an important factor influencing health behavior change. Interestingly, this finding is in contrast with earlier studies in Zambia as well as in other developing countries (Phiri *et al.*, 2014; Singh *et al.*, 2012; Grigg *et al.*, 2014) which suggested that women who gave birth at home lacked knowledge about the risks associated with this behavior. Moreover, persuasive messages which focus on building knowledge and creating awareness regarding the severity of health problems might not prove successful if people under-estimate their personal risk and susceptibility (Speizer *et al.*, 2014; Story *et al.*, 2012).

In addition to low risk perceptions, our findings suggest that most women who gave birth at home had a negative attitude towards the health services provided at the clinic because of their perceived poor quality due to non-availability of nurses, negative experiences with nurses during ANC visits or delivery during their previous pregnancies, poor state of labour wards, and absence of MWHs. Moreover, women perceived various barriers including lack of funds for baby clothes and requirements for the mother during and after labour, long distances to the clinic and high transport costs which prevented them from delivering at the clinic. In our opinion, public health interventions focusing on improving maternal health outcomes would benefit from targeting women's perceived susceptibility as an important determinant of their health behaviour change. Public health interventions would also benefit from mitigating physical and economic barriers preventing women from accessing maternal healthcare services.

Our findings show that social and cultural norms promoting women to depend on their husbands, parents and important others for the final decision about the place of delivery contribute to most women giving birth at home. For example, our findings suggest that despite participating in the discussion regarding preparations for childbirth, most women depended on their husbands and parents for the final decision. Moreover, the low social status of women and their dependence on their husbands for financial resources and support might be causing a delay in decision-making about the place of delivery which often resulted in most women giving birth at home. These findings are consistent with our previous findings (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b) and those from Ghana (Speizer *et al.*, 2014) and India (Allendorf, 2014). These studies highlighted the important

role decision-making and women's autonomy play in the use of facility delivery services and showed that women who had more autonomy were more likely to deliver in a health facility. In addition, these findings are consistent with those by Thaddeus and Maine (1994) which showed the importance of decision-making in limiting access to, and utilization of, maternal healthcare services. Together, these findings highlight the importance of empowering women with decision-making skills and resources in order to mitigate barriers that make it difficult to do so. These findings also highlight husbands, parents, and friends as important targets for interventions.

Our findings also suggest that women's positive attitude towards TBAs is an important factors motivating women to give birth at home. In general, respondents indicated great trust and confidence in TBAs and held many positive beliefs about them and the benefits to be gained from using their services. They described the TBAs as available, reliable, familiar, skilled, polite, patient, respectful and caring.

Consistent with other studies (Nyamtema *et al.*, 2011; Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Stekelenburg *et al.*, 2004; Titalley *et al.*, 2010), living with the TBAs in the same community, knowing them, and having trust in them were found to be important factors influencing women's attitude towards TBAs. Most women indicated that TBAs had a "more humane" attitude towards mothers during labour than the nurses. Indeed, the nurses, who, could usually not be found at the clinic, shouted at them during delivery. This finding is consistent with previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Titalley *et al.*, 2010; Grigg *et al.*, 2014; Wilunda *et al.*, 2014) which have suggested that public health interventions would benefit from focusing on improving the staffing and motivation levels for midwives and nurses in the clinics, as well as encouraging collaboration with TBAs.

Women's decisions on the place of delivery seem to be influenced by their evaluation of the comparative advantages of either delivering at the clinic or staying at home waiting for assistance from the TBA. Furthermore, women's evaluation of these perceived benefits seems, to a large extent, to be based on their past experience with either delivery at the clinic or at home. Upon engaging in health behavior, women will evaluate the expected outcomes, based on the available information their past experience (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Titalley *et al.*, 2010). Thus, public health interventions and formal health systems would benefit from recruiting and motivating midwives and nurses to serve in their local communities, and providing traditional birth attendants with requisite skills. Indeed, incorporating the traditional birth attendants in the formal health system might significantly improve the number of institutional deliveries.

Interestingly, giving birth in one's house was associated with various gains to the woman – such as privacy and comfort during labour, as well as maintaining a connection with the "rest of the family". These perceived benefits of giving birth at home were contrasted with the hardships of sleeping in the mothers' shelter without beds or mattresses and giving birth in a clinic labour ward where they perceived no privacy. Thus, the women believed that not all pregnancies should be medicalised. Rather, low-risk pregnancies should be identified during ANC and be allowed to take place at home under supervised and skilled

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care linked to a functioning referral system. This finding is consistent with studies from Nigeria (Envuladu *et al.*, 2013), but also from other developed countries (Grigg *et al.*, 2014; deJonge *et al.*, 2013). For example, deJonge *et al.* (2013) in The Netherlands – a country in which around 21% of pregnant women choose to give birth at home (Statistics Netherlands, 2009) – showed that planned home birth for low risk women was not associated with an increased risk of adverse maternal outcomes.

In the current study, women's evaluation of their and their baby's perceived medical safety was not only based on the availability of the TBAs during and after labour, but also on the woman's perception of the birth attendants' skills. This finding is in line with previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2014b; Sialubanje *et al.*, 2015a; Sialubanje *et al.*, 2015b; Moyer and Mustafa, 2013; Srivastava *et al.*, 2015) and which showed the importance of perceived quality of care in influencing women's attitude towards the place of delivery and the birth attendant. Future studies should focus on the evaluation of the perceived and actual quality of care among TBAs and evaluate their level of skills. Such an evaluation could have important policy implications for the continued use of TBAs in obstetric care in developing countries, and the decision whether to provide formal training to this group anymore.

Some potential limitations of our study should be noted. First, these findings are only based on the experiences of the women who accepted to participate in the FGD and a few IDI respondents; since the recruitment of the FGD respondents was done in the community during community meetings, we do not have information on how many were approached or how many declined participating in the study. Moreover, the experiences of the husbands were not explored due to logistical reasons. FGDs with husbands could have provided balanced views on the factors that determine the choice of delivery places and birth attendant preferences.

Conclusion

To conclude, our findings show that most women give birth at home due to several individual, family and health system-related factors including women's low risk perception regarding their personal susceptibility to labour complications, negative attitude towards facility-based delivery services, lack of decision-making autonomy regarding child birth, and dependence on the husband and other family members for the decision regarding the place of birth. Moreover, various physical and socioeconomic barriers including long distances, lack of money for transport and the requirement to bring baby clothes and food while staying at the clinic prevented women from delivering at the clinic.

Women's positive attitude towards TBAs, e.g., women's perception that TBAs were skilled, respectful, friendly, trustworthy and available when they needed them, motivated them to seek the TBAs' services and prevented them from utilising skilled facility based delivery services. These results offer starting points for future interventions which, in our opinion, should focus on improving women's decision-making autonomy regarding childbirth and also empowering them with skills and resources to improve their socioeconomic status.

These findings also highlight the need to help women perceive the benefits of delivering at the clinic – which they currently often do not recognise. Moreover, interventions and policy should focus on husbands, parents, and friends as well as on improving staffing levels in the clinics, e.g. by making sure nurses and midwives are always available, and by motivating midwives and nurses to serve in their local communities by providing them with financial, housing and training incentives. The linkages between TBAs and midwives should be strengthened through close collaboration and establishment of a functional referral system.

Moreover, although, due to a policy change the training of TBAs to acquire basic midwifery skills does not receive funding anymore (Gabrysch *et al.*, 2013), the current study suggests that maternal health outcomes might improve if this medical training were reinstated, especially, TBAs themselves also stated they were often lacking in the required skills. Finally, interventions aimed at mitigating the physical and economic barriers through providing new mothers' shelters and refurbishing existing ones, and providing women with the requisite resources such as mother-baby packs, might persuade more women to go to a health centre and wait for delivery there.

Chapter 5

Improving access to skilled facility-based delivery services: Women's beliefs on facilitators and barriers to the utilization of maternity waiting homes in rural Zambia

Published as:

Sialubanje C, Massar K, Van der Pijl MSG, Kirch EM, Hamer DH and Ruiters RAC. (2015) Improving access to skilled facility-based delivery services: Women's beliefs on facilitators and barriers to the utilization of maternity waiting homes in rural Zambia. *Reproductive Health*; 12:61

Abstract

Maternity waiting homes (MWHs) are aimed at improving access to facility-based skilled delivery services in rural areas. This study explored women's experiences and beliefs concerning utilization of MWHs in rural Zambia. Insight is needed into women's experiences and beliefs to provide starting points for the design of public health interventions that focus on promoting access to and utilization of MWHs and skilled birth attendance services in rural Zambia. We conducted 32 in-depth interviews with women of reproductive age (15-45 years) from nine health centre catchment areas. A total of twenty-two in-depth interviews were conducted at a health care facility with a MWH and 10 were conducted at a health care facility without MWHs. Women's perspectives on MWHs, the decision-making process regarding the use of MWHs, and factors affecting utilization of MWHs were explored.

Most women appreciated the important role MWHs play in improving access to skilled birth attendance and improving maternal health outcomes. However several factors such as women's lack of decision-making autonomy, prevalent gender inequalities, low socioeconomic status and socio-cultural norms prevent them from utilizing these services. Moreover, non-availability of funds to buy the requirements for the baby and mother to use during labor at the clinic, concerns about a relative to remain at home and take care of the children and concerns about the poor state and lack of basic social and healthcare needs in the MWHs – such as adequate sleeping space, beddings, water and sanitary services, food and cooking facilities as well as failure by nurses and midwives to visit the mothers staying in the MWHs to ensure their safety prevent women from using MWHs.

These findings highlight important targets for interventions and suggest a need to provide women with skills and resources to ensure decision-making autonomy and address the prevalent gender and cultural norms that debase their social status. Moreover, there is need to consider provision of basic social and healthcare needs such as adequate sleeping space, beddings, water and sanitary services, food and cooking facilities, and ensuring that nurses and midwives conduct regular visits to the mothers staying in the MWHs.

Introduction

Globally, around 287 000 women die annually from preventable pregnancy and childbirth-related complications (WHO, 2014b; 2014c). Almost all (99%) of the maternal deaths occur in developing countries and more than 50% occur in sub-Saharan Africa (WHO, 2005; 2014b). Zambia is one of the sub-Saharan African countries with a high maternal mortality ratio (MMR) at 398 deaths per 100 000 live births (CSO, 2014). Most of the maternal deaths and morbidity have been shown to be associated with low or non utilization of skilled birth attendance. Skilled birth attendance is considered to be the most important intervention for ensuring optimal maternal and newborn health outcomes (Graham *et al.*, 2001). Many maternal and perinatal deaths could be prevented if all women delivered their babies in facilities with adequate resources and staffing that are providing a high quality of medical care (Gabrysch *et al.*, 2011).

The proportion of women who receive skilled birth attendance is still low in Zambia (CSO, 2014). Many women (53%) still give birth at home and most (62%) do not receive assistance from skilled birth attendants. However, studies have shown that most women who give birth at home express willingness to give birth at the clinic (Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004). For example, a study by Stekelenburg *et al.* (2004) showed that, although most pregnant women (94%) indicated they would prefer to give birth in a health centre, only 54% actually did (Stekelenburg *et al.*, 2004).

Rural-urban disparities have been reported in the utilization of skilled birth attendance services. For example, the United Nations (UN) report (UN, 2013) showed that, in sub-Saharan Africa, less than half (50%) of the women in rural areas received skilled attendance at birth compared to over 80% in urban areas. In Zambia, only 30% of the women in rural areas are attended to by a skilled provider compared with 80% of the births in urban women (CSO, 2014). Several reasons have been reported for the low utilization of skilled birth attendance services in the rural areas of the country. For example, studies conducted in Zambia (Gabrysch *et al.*, 2011; Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004; Walraven *et al.*, 2000) showed that, in addition to limited access to healthcare facilities due to physical and logistical barriers such as long distances to health facilities and high transportation costs, poor quality of services due to low midwifery staffing levels and a lack of medical equipment for emergency obstetric care, are important reasons preventing pregnant women in rural areas from accessing skilled birth attendance. Further, Sialubanje *et al.* (Sialubanje *et al.*, 2014a, 2014b) showed that nurses' disrespectful attitude towards pregnant women, pregnant women's negative attitude towards healthcare services due to the low quality of services women receive at the clinic, social norms regarding childbirth and indirect costs of buying baby requirements or food while staying in a health care facility are important reasons for pregnant women in rural areas to refrain from accessing skilled birth attendance. Mitigating these barriers could improve the utilization of skilled birth attendance services (Sialubanje *et al.*, 2014a, 2014b; Lohela *et al.*, 2012).

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To overcome physical and logistical barriers such as long distances and high transportation costs to healthcare facilities faced by women living in rural areas, maternity waiting homes (MWHs) have been established in many developing countries, including Zambia (Thaddeus and Maine, 1994; Stekelenburg *et al.*, 2006; WHO, 1996). The World Health Organization (WHO) has defined MWHs as “residential facilities, located near a qualified medical establishment, where women living far from the healthcare facility and those with high-risk pregnancies can wait for their delivery and be transferred to a nearby medical facility shortly before delivery, or earlier, should complications arise” (WHO, 1996).

Studies investigating the effectiveness of MWHs have reported positive results. For example, studies from Zimbabwe (Kelly *et al.*, 2010), Ethiopia (Millard *et al.*, 1991), Eritrea (Lori *et al.*, 2013) and Liberia (Andemichael *et al.*, 2009) as well as a WHO report (1996) showed that MWHs improved pregnant women’s access to healthcare facilities, led to an increase in the number of women receiving skilled birth attendance, and reduced maternal mortality in the area and improved maternal and new born health outcomes among women who stayed in the MWHs during the last period of their pregnancy. The report (WHO, 1996) also showed that MWHs were essential in the management of women with high-risk pregnancies. Moreover, a study conducted in rural Zambia (Van Lonkhuijzen *et al.*, 2003) comparing women using MWHs and those who did not use them showed that, although women using MWHs had higher maternal risk factors (83%) compared to those who did not use MWHs (53%), there were no differences in maternal outcomes between the two groups after delivery, suggesting that MWHs were effective in reducing maternal mortality.

Qualitative studies exploring women’s perceptions towards MWHs show that most women had a positive attitude towards MWHs and expressed willingness to stay in them while waiting for labour. For example, in their study conducted in Kalabo district, Zambia, Stekelenburg *et al.* (2004) reported that most respondents (97%) expressed willingness to stay in a MWH if it were available. Similarly, a study evaluating a community trial on MWHs in Liberia (Lori *et al.*, 2013) showed that traditional midwives participating in the study believed that MWHs provided a safe environment for pregnant women preparing for delivery, allowed them to stay close to the healthcare facilities and helped them rest before giving birth. The study also showed that, compared to the communities without MWHs, those with MWHs experienced a significant increase in the number of births from baseline to post-intervention. In contrast to these positive views, a study from Ghana (Wilson *et al.*, 1997) reported low utilization of MWHs due to various factors including the cost associated with staying in a MWH, the hardship of staying away from home and the absence of health personnel in healthcare facilities (Lori *et al.*, 2013; Mramba *et al.*, 2010).

Little research on women’s perceptions towards MWHs has been conducted in Zambia. Study findings from other countries may not be applicable to the rural Zambian context. Women’s experiences and opinions regarding utilization of the MWHs may differ from one geographical, socio-cultural and economic context to another. The purpose of this study, therefore, is to explore women’s experiences and beliefs concerning utilization of MWHs in rural Zambia. Insight is needed into women’s experiences and beliefs to provide starting

points for the design of public health interventions that focus on enhancing access to and utilization of skilled birth attendance services in rural Zambia, by promoting the use of MWHs.

Methods

Study design

The study was qualitative in design and used in-depth interviews (IDIs) to provide a detailed understanding of the women's experiences and beliefs concerning utilization of MWHs in Kalomo district. The Tropical Diseases Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia granted ethical approval.

Study setting

The study was conducted in Kalomo district, located 360km south of the capital Lusaka, and covering a total surface area of 15000 km². It has an estimated population of 275.779 (CSO, 2010) with an annual growth rate of 4.4%. Most of the population (92%) live in rural areas with subsistence farming and cattle rearing being the major economic activities. The district is one of the poorest in the country, with more than 70% of its population living on less than a dollar per day (CSO, 2007). Administratively, the district is divided into three constituencies, four chiefdoms and twenty political wards. The health system in the district comprises two hospitals, thirty-four health centres and several health posts. Furthermore, only 52% of the health care facilities have access to reliable electricity (Hamer *et al.*, 2012). The district is one of the rural districts in the country with low maternal healthcare service utilization rates, where less than 30% of the women receive assistance from a skilled birth attendant in a health facility, compared with 80% of the births in urban women (CSO, 2014; Sialubanje *et al.*, 2014a, 2014b; Hamer *et al.*, 2012). The main players in the maternal health programmes are the Ministry of Health, missionaries, non-governmental organizations, community leaders and various community-based health agents, including traditional birth attendants.

Study population and sampling techniques

The study participants were selected from women of reproductive age (aged between 15 and 45 years) who had given birth within one year prior to the study and were visiting the local health centre for their children's routine under five clinics. To be eligible to participate in the interview, women must have had resided in the area for more than six months; those who had lived there for less than six months were excluded because the investigators thought these women would not have had enough local experience on utilization of MWHs in the area. In addition, women aged below 15 and above 45 years were excluded from participation.

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Selection of study participants was done using a purposeful homogeneous sampling technique. This technique was used in order to select respondents with similar experience regarding utilization of MWHs and childbirth services, while, at the same time, allowing for recruitment of respondents with different characteristics in terms of their age, number of children, marital status, and education level, which helped provide insight into the similarities and differences in their experiences (Ary *et al.*, 2013; King & Horrocks, 2010).

To begin with, all the ten health centres with a MWH in the district were identified and included in the research with the help of the district managers at the District Medical Office. In addition, five out of a total 25 health centres without a MWH were also purposefully selected and included in the study.

A month prior to the interview, the principal investigator contacted respective health centre in-charges to inform them about the study. Due to logistical challenges, it was not possible to hold meetings with respective health centre in-charges. Instead, they were contacted by phone and the purpose and objective of the study were discussed in detail. The health centre in-charges were then asked to inform the mothers attending the under five clinics about the study and to explain its purpose and objectives – that is, the study aimed to gain insight into their experience and knowledge about MWHs in their areas, how the decisions for pregnant women to use the service were made and what they thought were the main factors affecting utilization of the service. This information was shared by health centre in-charges during the health promotion sessions conducted by nurses and midwives during each under five clinic visit, and involved all the women attending the under-five clinics on a particular day. Women who were willing to participate in the study were advised on the interview date and were asked to return to the clinic for the interview on an agreed upon date. The date for the interview was set by the health centre in-charge and then communicated to the research team through the principal investigator.

Data collection

The IDIs were conducted from the second week of March, 2014 to the end of May, 2014 and lasted for ten weeks. The research team travelled to the health centre on the day of the interview. To ensure privacy and confidentiality, each IDI was conducted in a quiet place, outside health centre premises, normally under a tree for shade and lasted between 30 and 50 minutes. The IDIS were conducted in Tonga, the local language in the area. Before each IDI, written consent was obtained from each participant by requesting them to read and sign the consent form, which had been translated into the local language. Research assistants read the consent form aloud for those who could not read.

After obtaining consent, research assistants requested each respondent to complete a short demographic questionnaire which included questions such as the respondents' age, number of children, marital status, level of education, occupation, level of income per month, walking time to the clinic, place of delivery for the youngest child and history of complications during the previous delivery. This questionnaire was read to the respondent in Tonga and completed by the research assistants. The questionnaire included open-ended

questions on age, marital status, number of children, level of education, occupation, level of income, estimated walking time to health care facility, place of delivery for the youngest child, history of complications during labour, and of use a MWH. The last question was only applicable for the respondents from a health care facility with a MWH. After completing the questionnaire, the interviews were conducted. Each IDI was facilitated by two trained research assistants using a semi-structured interview guide which was translated into Tonga. One research assistant conducted the interview, while the second one recorded using a digital voice recorder. The principal investigator attended interviews at random to ensure the data collection protocol was consistently followed by the research team members.

A total of 32 IDIs were conducted in 9 health centres, 22 of whom were conducted in 7 health centres with a MWH, and 10 were interviewed in 2 health care facilities without a MWH. Initially, 10 health centres with MWHs and 5 health centres without MWHs were identified to be included in the study. After 15 IDIs involving respondents from five health centres with MWHs, and 10 IDIs from health centres without MWHs, data saturation was achieved; that is, no more substantial information was obtained. At this point, the research team decided to stop the interviews and, thus, leave out the remaining selected health centres. Rather, they decided to only conduct the interviews in the two mission-owned health centres with MWHs in the district. The rationale for this decision was to obtain extra insight into the study from these respondents because, compared to the MWHs in the other health facilities in the district, MWHs in the mission facilities were of better quality and provided better social services such as a larger sleeping space, mattresses, beds and blankets. In addition, the facilities had better cooking facilities and sanitary conditions with piped water. Seven extra respondents were interviewed from these two health centres, giving a total of 32 respondents. The age of the respondents ranged between 17 and 44 years old.

Research instrument

A semi-structured interview guide was developed that had three pre-determined themes. The first theme focused on women's perspectives and experience regarding MWHs and its role to improve facility-based skilled birth attendance, and included questions on women's experience regarding utilization of MWHs. For example, what they thought about MWHs; whether they had stayed in an MWH before or not; how they felt about their stay in an MWH; what they thought about accessibility to MWHs in their area; whether they would use it if they were pregnant again and why; what they thought about whether MWHs were important in helping women deliver at a health centre or not; and if so to explain why and how. The second theme was on the decision-making process regarding utilization of MWHs and included questions about how the decision is made and who makes it when women want to go to the MWHs and the role of the husband in the decision-making process. The third theme focused on the important factors which affect women's actual utilization of MWHs. Since there were two different settings (with or without MWHs present) in which the interviews took place, two interview guides were developed reflecting these

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different settings. The overall themes were the same for both interview guides, however some questions were different. For example, at the health care facility with a MWH, women were asked if and why they did or did not go to stay at the MWH in the last period of their pregnancy. If they did stay in the MWH, their perspectives were explored. At the health care facility without a MWH, women were asked to share their view on MWHs. Furthermore, the women were asked if they would use the MWH if available at the health care facility and why.

Data analysis

Demographic information was entered into an Excel sheet and transferred into IBM SPSS Statistics 21 for processing. Descriptive statistics and frequencies were used to summarise the demographics of the respondents which are summarised in Table 1.

The voice recordings from the interviews were transcribed and translated into English by the research assistants. To check for accuracy, a few transcripts (20%) were back – translated into Tonga. Members of the research team then compared the Tonga and English versions for differences and similarities while listening to the original voice recording. After verification of accuracy in translation, each transcript was then thoroughly read by one research assistant while the other one was listening to the corresponding voice recording. Each translated transcript was compared with the hand-written field notes that the research assistants had prepared during the interviews. After proof-reading and making corrections, the transcripts were saved on a password-protected computer. The word documents were then exported into Nvivo 10 MAC for processing. The exported data were then coded and the categories and key sub-themes were identified. In order to make it easy to compare the perspectives of women from the facilities with a MWH and those from health care facilities without a MWH, the data from the two groups of respondents was coded separately. Data analysis was based on the three predetermined themes. An inductive approach was used to derive the sub-themes from the main themes by content-analysing and grouping all the similar statements made with respect to particular themes. Several sub-themes emerged from the data analysis; all sub-themes are described below in the respective sections for the main research themes.

Results

Demographics

Table 1 summarizes the demographic characteristics of the 32 respondents included in the study. The mean age was 26.8 years and the majority (84.4%) of the respondents were married, and had an average of 3 children. Most of the respondents (68.8%) were farmers and about two in five (38.7%) had an income of less than 100 kwacha per month. The estimated walking time to the clinic from the place of the respondents' residence was one hour and 40 minutes and the majority (87.5%) had delivered their youngest child at the

Table 1: Background characteristics of the respondents.

Variable	n (%)	Mean (SD)
Mean age in years		26.8 (7.5)
Marital status		
Single	4 (12.5%)	
Married	27 (84.4%)	
Divorced	1 (3.1%)	
Number of Children		3.1 (1.9)
Level of education		
Lower primary	1 (3.1%)	
Upper primary	13 (40.6%)	
Junior secondary	14 (43.8%)	
Senior secondary	4 (12.5%)	
Occupation		
Housewife	3 (9.4%)	
Unemployed	3 (9.4%)	
Farmer	22 (68.8%)	
Self-employed	3 (9.4%)	
Formal employment	1 (3.1%)	
Mean income per month in Zambian kwacha		183.6 (265.2)
Walking time to the clinic in minutes		100.8 (58.1)
Place of delivery for the youngest child		
Home	4 (12.5%)	
Clinic	19 (59.4%)	
Hospital	9 (28.1%)	
Use of MWHs [for the 22 pp from clinics with MWHs]		
Yes	6 (27.3%)	
No	16 (72.7%)	
Number of children		
For those who did use MWHs		3.2
For those who did not use MWHs		2.8
History of complications during labour		
Yes	6 (18.8%)	
No	26 (81.2%)	

health care facility. Of the 32 respondents, 22 were interviewed at a health care facility with a MWH and 10 were interviewed at a health care facility without a MWH. Only 2 out of 22 (9.1%) of the respondents interviewed at a health care facility with a MWH had a home delivery compared to 2 out of 10 (20%) that were interviewed at a health care facility

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without a MWH. Of the 22 respondents interviewed at a health care facility with a MWH, 6 (27.3%) utilised a MWH and 16 (72.7%) did not. Out of the 32 respondents interviewed, 6 (18.75%) experienced complications during labour.

Table 2: Health Centres where the interviews were conducted and number of respondents per facility.

Name of Facility	Number of respondents
Health Centres with MWHs	
Dimbwe	4
Kanchele	4
Mubanga	3
Mukwela	2
Siachitema	2
Namwianga Mission clinic	3
Zimba Mission Hospital	4
Health Centres without MWHs	
Choonga	4
Mawayaya	6

Theme 1: Perspective on maternity waiting homes

The first theme focused on women's perspectives regarding MWHs as well as accessibility and utilization of MWHs. All respondents mentioned that MWHs were important since they helped pregnant women to overcome the problem of having to travel long distances to healthcare facilities. They explained that during the last month of their pregnancy, pregnant women could go and stay in the MWHs and wait for their labour near the health care facility. Respondents, especially those from health care facilities without MWHs, added that, with a MWH at the health care facility, women could decide when to leave home to go and stay there instead of having to travel to the clinic when they are already in established labour. They stated that women could either walk from home to the MWHs when they still had the strength to do so or they could use private transport. Respondents mentioned that women who resided far from the health centres experienced delays in reaching the health care facility and that MWHs were especially important for these women. It was also mentioned that MWHs were especially convenient for the women who experienced labour and delivery at night. They explained that MWHs were important for the pregnant women who lived far from the health care facility as it was extremely difficult for them to find transport during the night. They explained that while staying at the MWH, women had immediate access to health care and felt protected against labour complications. Moreover, respondents

explained that women were happy that they were able to rest in the MWH before they went into labour. When labour started, it was easy for them to access facility based delivery.

“It’s a good idea. You can come here if you don’t have transport at your place. You may walk when you still have strength, then you overcome the distance, you stay here waiting for the right time to come, rather than being at home until your time comes and walking a long distance while something is paining” (20-year-old respondent)

In contrast, most respondents who lived close to the health centres with MWHs believed that they didn’t need the MWHs because their place was near to the health care facility. Furthermore, most multigravida older respondents preferred to wait at home as they believed they would recognise the labour in time to go to the health care facility. They explained that it was only necessary to go to the MWHs if the woman had complications during pregnancy. The young respondents explained that they didn’t have enough knowledge on the MWHs as they had just experienced their first pregnancy. Therefore, they just decided to stay at home and only went to the clinic when they were in established labour.

When asked whether most women had access to the MWHs, all 22 respondents from the health care facilities with a MWH explained that it was easy for women to go and stay there, as there were no rules or regulations regarding the use of the service. In contrast, the 10 women from the health facilities without MWHs argued that it was hard for them to reach the centres which had MWHs.

Regarding their experience while staying in the MWHs, the 6 respondents who had used the MWHs and most of the older women from the health centres with MWHs complained that women felt abandoned by the healthcare staff as nurses did not check on them and that it was a waste of time staying at the MWHs as it was possible for one to reside there for weeks without being attended to by nurses or midwives. Moreover, the 13 out of the 22 (60%) respondents who lived close to health care facilities with an MWH but had not used the service were concerned with pregnant women’s inactivity when staying in the MWHs waiting for labour. They argued that it was not good for pregnant women to stay in the MWH because the nurses advised them to rest while staying there. Most older women stated that they preferred to have their labour start earlier and felt that staying active would assist pregnant women have their labour start early. Therefore, respondents explained that some women preferred to stay at home and keep working until the onset of their labour.

When asked whether they would use the MWHs if they were available, all 10 respondents from the health centres without MWHs reported that they would like to see MWHs provided at their health care facility, and that most women would utilise them. They explained that that most women would stop worrying about transport if MWHs were available at their health care facility,

“If the clinic had the maternal waiting home, the mother shelter here, most pregnant women would come here and stay to wait for her time” (44-year-old respondent)

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When asked whether most women used MWHs where they were available, all the respondents from both the facilities with MWHs and those without reported that most women did not utilise the service. They mentioned that most women did not go to stay in the MWHs because they delayed making the decision to leave home. They explained that although they had planned to stay in the MWH, some women, especially the older ones with many children, went into labour while they were still at home due to lack of transport to take them to the MWHs. Respondents explained that especially young women delayed utilising the MWHs because they had difficulties in estimating the right time to go to the MWHs.

"I wanted to stay there but the problem was that it was my first pregnancy so I didn't know when labour would start. So I am planning to come there next time" (24-year-old respondent)

Regarding the reasons for utilising the MWHs, all respondents reported long distances and lack of transport from home to the health care facility as the main reasons for utilising the MWHs. Additionally, fear of complications was another important reason for utilising the MWHs. They explained that, often, women who had complications during pregnancy and those who lived far from the clinic were advised by the nurses during antenatal care (ANC) visits to stay in the MWHs. Women who attended ANC at a clinic without an MWH were advised to go and wait for delivery at the district hospital or at a health centre with a MWH.

"I had some complications; I had some problems so I was told to stay at the clinic before time of delivery" (25-year-old respondent)

Theme 2: Decision making process and barriers to utilising a maternity waiting home

The second theme focused on the decision-making process whether or not to utilise MWHs, as well as the factors that influence the decision-making process. Asked about who makes the decision for pregnant women to use the service, most young respondents with few (that is, one or two) children from both the health care facilities with MWHs and those without mentioned that the husband is the one who decides whether or not the woman should go and stay at the MWH during the last months of pregnancy. They explained that although most women discussed with their husbands the importance of their stay at the MWHs and often persuaded them to allow their wives to use the MWHs, the final decision whether the woman should use the MWH or not was made by the husband. In addition, young respondents mentioned that the women's mother and mothers-in law were also involved in the decision-making process. Furthermore, all respondents from both the health care facilities with a MWHs and those without also mentioned that nurses at the clinic play an important role in the decision-making process as they often advise women during ANC visits to come and stay at the MWH, especially when there were indications of complications.

However, most older respondents mentioned that they made the decision alone and that they did not receive help from anyone in the decision-making process.

“The husband is the one who decides” (23-year-old respondent)

“When we are in the month of 8, the nurses at the clinic tell us to come and wait for our time here, yes” (18-year-old respondent)

Regarding factors affecting the decision-making process, respondents who had used MWHs and those who had experienced complications during previous pregnancies mentioned the risk of complications as the major reason to utilise MWHs. Young respondents with no experience with childbirth indicated that fear of complications was the major reason for using MWHs. They explained that as the husband made the final decision, he considered the advice from the nurses at the clinic. They indicated that sometimes during ANC women were told that their baby was not in the right position in the womb, which could cause problems during delivery. Additionally, respondents explained that some women, especially the young ones, were advised by nurses that they would not be able to push the baby out and needed medical help with this process. They also explained that some women, especially the old ones with many children were advised to go and deliver at the clinic because they might bleed a lot after giving birth. If they stay in the MWH before giving birth, women who experience these kinds of complications receive immediate medical help, as they do not experience delays in reaching the clinic.

Asked about which group of women were more at risk of developing complications, respondents mentioned that all women were at risk of developing complications. They explained that especially young women who had no experience with childbirth were at greater risk of developing complications such as prolonged or obstructed labour than older ones with many children. Furthermore, older women who had complications during their previous pregnancies and deliveries were believed to be at a higher risk of developing complications in future pregnancies. Moreover, respondents explained that women (regardless of their age) who were told by nurses during ANC visits that they had pregnancy complications such as the baby not lying well in the uterus, having high blood pressure, etc, were also believed to be more at risk of developing complications during labour. Respondents explained that, compared to the older women with many children, young mothers were more likely to anticipate complications because they were scared of labour complications and believed that they had no experience with childbirth. They explained that many multigravida older respondents believed that they had enough experience with childbirth and that they knew themselves quite well, and that they would know whether they would develop complications or not.

“Complications, that’s what they look at. Maybe when you deliver at home and you bleed a lot, they won’t help you. But here at the hospital they can control the bleeding. So that is what they consider before deciding with the husband” (23-year-old respondent)

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“The mothers don’t have an idea about how things go here. But the nurses will help and advise that you are supposed to be here before your time of delivering comes” (24-year-old respondent)

Another important factor that the families considered during the decision making process is distance. Most respondents interviewed from both the health care facilities with MWHs and those without explained that walking from home to the clinic while in labour pain was difficult when living far from a health centre. Thus, it might be safer to stay at the MWHs before delivering. Additionally, respondents mentioned that availability of transport also plays an important role as the couple decides on whether the woman should go and stay in the MWHs.

“The distance, it’s difficult for the woman to walk when she feels the labour pains from home coming here. It’s better for her to come here and stay” (28-year-old respondent)

Regarding challenges in the decision making process, more than half (18 out of 32) of the respondents interviewed from both the health care facility with an MWH and those without indicated that the lack of a family member to take care of the children and another one to accompany the woman to the MWH and help her while staying there usually made it difficult for the pregnant woman to leave home to go and stay at the clinic. They explained that many women had young children who could not stay by themselves while their mother was away at the MWH awaiting labour. Respondents explained that often, the husband was not able to stay at home to take care of the children due to various commitments, including working in the field.

Another factor that was considered by the wife and husband as they made the decision was the availability of funds to buy the requirements for the baby and mother to use during labour at the clinic. Respondents mentioned that during ANC, nurses advised pregnant women to prepare for childbirth, and that as they went to give birth at the clinic they should carry baby clothes and requirements for the mother such as a wrapper and cleaning materials like bleach. Respondents explained that the husband was expected to find the money for the baby and mother requirements at the clinic. However, respondents explained that most families did not have enough money to buy these items and husbands who failed to provide these requirements refused to allow their wives to go and stay at the MWHs.

Moreover, when making the final decision, husbands considered the availability of people to work in the field. Most respondents who had not used MWHs interviewed at a health centre with MWHs mentioned that some women had not used MWHs because their husbands refused to allow them to leave home due to difficulties of having someone to work in the field, especially during harvest time.

“There is a challenge of how, who should take care of the children” (36-year-old respondent)

*“There is no problem, unless this time when we are harvesting, but we have to ask from the husband and say I want to go to the clinic. Husbands will then give us permission”
(18-year-old respondent)*

Theme 3: Factors affecting staying in maternity waiting homes

Respondents were asked if they faced challenges regarding the utilization of MWHs. Most respondents from both the health care facilities with MWHs and those without) mentioned that pregnant women faced many challenges when using the MWHs. Respondents who had used MWHs complained that many MWHs had no beds or mattresses and pregnant women had to carry their own beddings from home. They mentioned that those who failed to carry their own beddings and mattresses had to sleep on the floor. Respondents explained that this was a huge challenge for pregnant women as they had to walk long distances and could not carry beddings on their heads. Similarly, respondents from the health care facilities without MWHs stressed the need for pregnant women to be comfortable during their stay at the MWHs and that beds and mattresses should be made available.

“As for now we just sleep on the floor. There are no mattresses unless you bring them from home” (35-year-old respondent)

*“If they put beds and mattresses it could help women to be delivering at the hospital”
(17-year-old respondent)*

Furthermore, respondents who had used the MWHs and most respondents from the healthcare facilities with MWHs stated that the available MWHs had limited space for sleeping. They explained that some MWHs were very crowded because pregnant women came with an accompanying relative. They explained that sometimes women had to sleep outside because of the lack of space.

“There is no much space in the shelter. Pregnant women need space as they stay at the mother’ shelter. Because of not having enough space women have problems” (25-year-old respondent)

In contrast, all the 7 respondents from the two mission health facilities were happy with the quality of MWHs and the services provided there. They mentioned that the MWHs in the two health facilities had enough space for women and their accompanying relatives and that they had enough beds and mattresses for pregnant women to use. They also indicated that pregnant women staying in these MWHs were provided with blankets by the healthcare staff.

Another important challenge was the lack of food for pregnant women when staying in the MWHs. Respondents who had used MWHs and those from the health care facilities with MWHs mentioned that food was not provided to the pregnant women who stayed in the MWHs. They stated that women had to carry their own food from home. Respondents

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explained that it was hard for pregnant women to take their own food to the MWHs because they had limited food supplies which were not even enough to share with the other family members remaining at home. Additionally, respondents who had used MWHs indicated that it was usually unknown how long women would stay at the MWHs, and this made it difficult to estimate how much food they needed to take with them. They explained that often, the food ran out before women gave birth. In order to get extra food, women had to travel back home. They explained that while walking home, women risked giving birth on the way.

“The issue of carrying their own food is a problem. You find that she just has a small amount of food then she has to share it with the family, with children and husband. So it’s a challenge” (41-year-old respondent)

“It’s difficult for a mother if the food finishes. She has to go back home. Some women delivered on the way when they went back home to get food” (32-year-old respondent)

Another important problem was lack of water at the MWHs. Most respondents from health care facilities with MWHs stated that most MWHs had no water and women had to walk long distances to get water. They explained that, although in most cases, the accompanying relatives would draw water for the pregnant women, but when the pregnant woman was alone she had to walk the distance herself. In contrast, the respondents from the two mission health facilities were happy with the quality of the water supply, cooking facilities, and sanitary conditions. They indicated that MWHs in these facilities had running water and pregnant women did not have to walk long distances to look for water as the case was in the other health facilities.

“As for me, I can’t stay there for one simple reason; there is no water here. It is far where we get water from. They have to improve on the issue of water...” (35-year-old respondent)

Furthermore, respondents who had used MWHs and those interviewed at health care facilities with MWHs mentioned that the sanitation was poor in the MWHs and needed improvement. They mentioned that some MWHs had no toilets and bathrooms.

In addition, respondents who had used MWHs explained that nurses and midwives did not visit the mothers in the MWHs. They explained that some mothers stayed for a long time in the MWHs without the nurses or midwives checking on them to ensure whether they needed help or not. Respondents explained that the non-availability of nurses put most women at risk of complications even if they stayed at the MWHs. They stated that it is important that nurses and midwives make regular visits to the women staying in the MWHs so that those who need care are identified and assisted on time. On the contrary, the 7 respondents from the mission facilities said that most women from these facilities were happy with the way nurses treated them when they used the MWHs. They indicated that nurses usually visited the pregnant women staying in the MWHs and asked to those

who had problems to go and see the nurse or midwife at the clinic. Moreover, during these visits, the nurses identified the women who had no resources to buy the mother baby requirements and assisted them by providing them with these requirements from the clinic.

“If nurses are there, there is no problem; even if some of the things are missing there is no problem, just nurses are important” (24-year old respondent)

Discussion

The aim of this study was to explore women’s experiences and beliefs concerning utilization of MWHs in Kalomo, Zambia. Our findings show that that most women appreciate the important role MWHs play in improving access to skilled birth attendance and improving maternal health outcomes. However several individual, family and health system-related factors prevent utilization of these services.

Consistent with previous studies which highlighted the importance of MWHs in improving access to facility-based skilled birth attendance (Stekelenburg *et al.*, 2006; WHO, 1996; Kelly *et al.*, 2010; Millard *et al.*, 1991; Lori *et al.*, 2013; Andemichael *et al.*, 2009; Van Lonkhuijzen *et al.*, 2003; Wilson *et al.*, 1997; Mramba *et al.*, 2010), our findings suggest that most women in rural Zambia have a positive attitude towards this service. Their positive attitude seems to be based on their beliefs and their outcome expectations, i.e. what they would gain from the use of the service. For example, respondents believed that MWHs were an important means to overcome physical barriers such as the long distance to the health care facilities and that MWHs were an important means to improve access to skilled and facility-based birth attendance. Moreover, they saw them as a means to prevent complications during labour and delivery since pregnant women could easily get assistance from nurses and midwives at the clinic.

Moreover, respondents perceived social gains from the use of MWHs. They believed that staying in the MWHs provided pregnant women with an opportunity to rest from the strenuous field work which characterised their livelihood in the rural areas. Staying away from strenuous exercise and resting in the MWHs as they approached their labour was seen as important in improving labour and delivery outcomes for both the mother and the baby. Moreover, these beliefs seem to be based on the respondents’ past experience and the information provided by nurses during ANC at the clinic. Thus, MWHs were seen to have many important beneficial effects, not only to improve access to skilled birth attendance, but also to improve mother and birth health outcomes. This finding is in line with the original idea of the MWHs which started out as an intervention to improve maternal health outcomes for the women with high-risk pregnancies, but later included pregnant women who had limited access to facility-based skilled birth attendance (WHO, 1996). Our findings are also in line with a study from Liberia (Lori *et al.*, 2013) which showed the importance of MWHs in improving access to skilled obstetric care. Thus, public health programmes

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focusing on improving access to skilled birth attendance could benefit from intervention promoting increased availability of MWHs.

Interestingly, although our findings emphasise a positive role MWHs can play in improving access to facility-based skilled birth attendance services in rural areas, the results also show that most women who had access to an MWH did not utilise them because of various factors such as women's dependence on their husbands for decision-making, non-availability of funds to buy the requirements for the baby and mother to use during labour at the clinic, concerns about a relative to remain at home and take care of the children and concerns about the poor state of the MWHs. This finding is also important as it is in line with studies from other developing countries, for example, Ghana (Wilson *et al.*, 1997), which reported low utilization of MWHs. Further, this finding highlights the complexity of women's health seeking behavior and the need for public health interventions to not only focus on the target populations' attitude and intention, but also to ensure that health promotion interventions target factors that might make it difficult to enact the intended behavior. Indeed, many studies investigating the implementation of various health behaviors ranging from exercise to breast cancer screening (Armitage, 2004; Sheeran *et al.*, 2005; Sheeran & Oebell, 2000) have all reported the challenge of the "intention-behavior gap". For example, a study by Stekelenburg *et al.* in Zambia (Stekelenburg *et al.*, 2006) reported that although the majority of the women (94%) showed high intentions to use MWHs, only half of them (54%) actually did. Similarly, one of our recent studies (Sialubanje *et al.*, 2014b) which focused on predictors of maternal healthcare service utilization in rural Zambia showed that most women who had high intentions to give birth in a health facility under skilled birth attendance actually ended up giving birth at home. These findings highlight the need for health promotion interventions to consider providing the requisite skills and resources in order to enable people to implement their intended behavior.

Regarding the decision to go and stay at the MWHs, our findings shed light not only on the decision-making process, but also on an important interplay of factors that determine the pregnant women's decision to use the mothers' shelter. According to the women that were interviewed, they receive adequate information from the nurses about the existence and the importance of the MWHs. This information is in turn shared with the husband or with parents when the husband is not available. Interestingly, despite discussing the issue of childbirth with her husband, our findings suggest that the pregnant woman does not make the final decision. Rather, the women indicated the husbands play the most important and final role in the decision making process and made the final decision. Women's dependence on their husband for the final decision could have been as a result of the socio-cultural beliefs recognising the husband as the head of the household and their need for socioeconomic support from the husband. From the interviews, it became apparent that the husband was seen as a provider and women looked up to him for the final decision. Moreover, the dependence on the husband and a lack of decision-making autonomy was also perceived as a result of respect for the husband who is perceived to be the head of the household, and hence the decision-maker in most matters affecting the family. This

finding is in line with other studies from developing countries (Speizer *et al.*, 2014; Story & Burgard, 2012) which have identified the importance of women's low socioeconomic status and dependence on their husbands as an important factor which negatively affects women's health seeking behavior and prevents them from accessing skilled birth services, and which often leads to adverse maternal health outcomes.

Interestingly, our findings show that, although the distance to the clinic and the woman's risk of developing complications are the major factors which are considered by the husband as he makes the final decision, our results also suggest that the husband's final decision is not based solely on the available information from the nurses and midwives. Rather, our results suggest that several other factors such as the availability of funds to buy food and the requirements for the baby and mother to use during labour at the clinic, the availability of a relative to remain at home and take care of the children, and finding a relative to accompany the woman to the MWH and help her while staying there, are major influences on the final decision on whether the woman should leave home or not. Our findings suggest that finding an individual to accompany the woman to the MWH and help her while staying there is a challenge for some families and those that fail to find relatives to either remain at home or accompany the woman to the MWH may not allow the woman to use the MWH. Moreover, husbands who fail to raise adequate resources to provide for their wives either delay making the decision or stop their wives from leaving home to go and stay at the mother's shelter. Thus, although women discuss child preparedness and matters relating to child birth, the final decision is made by the husband. His decision is based not on the woman's risk to develop labour and childbirth-related complications and her access to skilled care in case of such complications, but mainly on the availability of resources at the family level.

These findings thus clearly show the complexity of the decision-making process regarding women's utilization of skilled birth attendance services. The findings are also in line with a study by Thaddeus and Main (1994) as well as studies from Ghana and Bangladesh (Wilson *et al.*, 1997; Speizer *et al.*, 2014) that reported the importance of individual, family and community level factors in delaying or preventing access to maternal healthcare services in developing countries. Thus, our findings highlight the importance of the individual level factors, the immediate family members such as the husband, mother and other relatives as important targets for interventions. Moreover, these findings suggest that partner involvement and engaging the community in which the woman lives is an important way to reduce the burden of work on the pregnant women in their late stages of pregnancy to enable them use MWHs (Moyer & Mustafa, 2013).

Another striking finding from our study is how women's perception of the availability and quality of the basic social and healthcare services provided in the MWHs influence their decision whether to use the service or not. Although dependence on their husbands to be allowed to use MWHs is an important factor limiting pregnant women's utilization of MWHs, the results also suggest that before leaving home, women take into consideration other important factors. Among these are the availability and quality of sleeping space, beds and mattresses, water and sanitary facilities, food and the cooking facilities in the MWHs.

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Our findings suggest that many MWHs did not have these basic facilities and that where they were available, they were either inadequate or not in good quality. These findings are important as they highlight the importance of basic social needs such as shelter, water and food as determinants of skilled birth care utilization. Before women are expected to use the available service, healthcare systems need to ensure that basic services are provided and basic needs are met (Sialubanje *et al.*, 2014a). Further, these findings suggest the gains to be made for public health interventions (that is, improved access to MWHs and skilled birth attendance) that focus on providing such needs in the healthcare facilities.

Women also consider their medical safety when staying in the MWHs. For example, most respondents were concerned about the fact that nurses and midwives never visited the pregnant women when they stayed in the MWHs to assess and monitor their conditions. This finding is important as it shows that although the original aim of the MWHs was to increase access to skilled birth attendance; this service may actually not be meeting this aim since women still feel they have no access to skilled care despite staying close to the clinic. This finding is also in line with various studies from Zambia (Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004) which have highlighted the importance of the availability of skilled birth attendants in health facilities in order to increase access to skilled birth attendance as well as improve labour and childbirth outcomes.

Potential limitations of our study should be noted. First, like all qualitative studies, our study findings may not be generalizable to other areas with different socio-cultural, economic and geographical contexts. Furthermore, these findings are only based on the experiences of the few women who accepted to participate in the IDIs; since the recruitment of the respondents was done at the clinic during the routine children's under five clinic at the health centre, we do not have information on the differences between the women who accepted to participate in the interviews and those who did not. Moreover, although the district has one of the lowest maternal healthcare service utilization rates (CSO, 2014; Sialubanje *et al.*, 2014a, 2014b; Hamer *et al.*, 2012), most of the respondents interviewed had given birth at the clinic and at the hospital. The reason for this selection was to have women who had experience with MWHs and clinic delivery. However, the selected respondents' experiences may not be representative of the views of the other women in the community, especially those who had given birth at home. Moreover, interpretation of the findings may have been influenced by the researchers' individual judgment and experience. Unfortunately, we could not conduct focus group discussions to compare and confirm the findings due to logistical challenges. This could have affected the validity of the findings.

Despite these limitations, we believe our study has provided important insights into the role of maternity waiting homes to improve access to skilled facility-based skilled birth attendance. As far as we know, this is the first qualitative study conducted on the subject in rural Zambia.

Conclusion

In conclusion, our findings suggest that MWHs could be a useful intervention in improving access to, and utilization of facility-based skilled birth attendance services. MWHs are an important means to mitigate long distances to health facilities and to enable women to have access to life-saving interventions during labour and childbirth. MWHs can also assist women to take rest from the laborious field work, which predisposes them to various pregnancy and childbirth related complications (Agbla *et al.*, 2006). However, currently, these potential benefits are not being realised in rural Zambia due to various challenges including individual, family, community and health system-related factors which women face when seeking to use the service. These factors include lack of decision-making autonomy and dependence on husbands, socio-cultural norms, and concerns about a relative to remain at home and take care of the children, concerns about someone to accompany the pregnant woman to the MWHs and people to work in the field, as well as concerns about the poor state and lack of basic social and healthcare needs in the MWHs – such as adequate sleeping space, beddings, cooking facilities, water and sanitary services, funds for mother and baby requirements, and food – as well as failure by nurses and midwives to visit the mothers staying in the MWHs to ensure their medical safety all prevent women from using MWHs.

These findings suggest important targets for interventions. For example, our findings suggest a need for an integrated community intervention focusing on supporting families to reduce the burden of work on the pregnant women during the late stages of pregnancy. Moreover, interventions need to focus on recognising and improving the low social status of women and provide them with skills and resources to ensure decision-making autonomy with regard to childbirth. Interventions should focus on promoting partner involvement by providing husbands with knowledge and skills to support their pregnant women in their utilization of MWHs and facility delivery services. Moreover, although, public health interventions should focus on increasing the availability of MWHs in the area, there is also an urgent need to consider the provision of basic needs such as adequate sleeping space, beddings, water and sanitary services, and food and cooking facilities in the available facilities. Further, interventions should focus on increasing the availability of trained and skilled birth attendants such as nurses and midwives to ensure quality of care and medical safety for women both in the waiting homes and during labour. Finally, further research is needed to measure and confirm the significance and importance of these findings in determining access to MWHs. Research is also needed to determine whether access to and utilization of MWHs actually ensure access to skilled birth attendance and improved mother and newborn health outcomes. Findings from those studies can be the basis for advocacy for a public health policy on MWHs in developing countries, which is currently non-existent.



Chapter 6

Husbands' experiences and perceptions regarding the use of maternity waiting homes in rural Zambia

Published as:

Sialubanje C, Massar K, Kirch EM , Van der Pijl MSG, Hamer DH, & Ruiters, RAC (2016). Husbands' experiences and perceptions regarding the use of maternity waiting homes in rural Zambia. *International Journal of Gynecology and Obstetrics*; 133(1):108-111

Abstract

The aim of this study was to explore men's experience and beliefs regarding the use of maternity waiting homes (MWHs) in Kalomo District, Zambia. As part of a qualitative study, in-depth interviews with the husbands/partners of women attending the under-five clinic at a health center with a MWH were conducted between April 1 and May 31, 2014. Men aged 18-50 years whose partner/wife was of reproductive age and who had lived in the area for more than 6 months were eligible for inclusion. Overall, husbands/partners were interviewed in seven rural health centers. Men perceived many potential benefits of MWHs, including improved access to facility-based skilled delivery services and treatment in case of labor complications. Their many roles included decision making and securing funds for transport, food, cleaning materials, and clothes for the mother and the neonate to use during and after labor. However, limited financial resources made it difficult for them to provide for their wives and newborns, and usually led to delays in their decisions about MWH use. Poor conditions in MWHs and the lack of basic social and healthcare needs meant some men had forbidden their wives/partners from using the facilities. Important intervention targets for improving access to MWHs and skilled birth attendance have been identified.

Introduction

Many women in rural Zambia do not receive assistance from skilled birth attendants during labor because of limited access to health facilities (Thaddeus & Maine, 1994; Gabrysch *et al.*, 2011; WHO, 2005) and the long distances to be travelled to reach them (CSO, 2009; Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004; Hamer *et al.*, 2012; Sullivan *et al.*, 2011; Ensor *et al.*, 2014; Gow *et al.*, 2013). To increase access, maternity waiting homes (MWHs) have been established in many low-income countries, including Zambia (WHO, 1996; Van Lonkhuijzen *et al.*, 2003). WHO has defined MWHs as “residential facilities, located near a qualified medical establishment, where women with high-risk pregnancies can wait for their delivery and be transferred to a nearby medical facility shortly before delivery, or earlier, should complications arise” (WHO, 1996).

Currently, evidence to support the effectiveness of MWHs to increase access to skilled birth attendance for women living in remote areas or with limited access to services is scarce (WHO, 2015d). However, studies conducted in low-income countries suggest that MWHs could help to improve maternal and newborn health outcomes (Van Lonkhuijzen *et al.*, 2003; Millard *et al.*, 1991; Van Lonkhuijzen *et al.*, 2012; Kelly *et al.*, 2010). In Ethiopia, Kelly *et al.* (2010) reported that women attending MWHs before hospital admission had lower maternal mortality rates and fewer stillbirths than did those who were directly admitted to a hospital.

Moreover, studies show that women have a positive attitude to MWHs (Millard *et al.*, 1991; Sialubanje *et al.*, 2015). Nevertheless, use of MWHs is still low in most low-income countries (Van Lonkhuijzen *et al.*, 2012; Van Lonkhuijzen *et al.*, 2003; Millard *et al.*, 1991; Kelly *et al.*, 2010; Sialubanje *et al.*, 2015; Wilson *et al.*, 1997) because of various reasons, including the lack of financial resources available while staying in the MWHs and women’s lack of decision-making autonomy (Sialubanje *et al.*, 2015; Speizer *et al.*, 2014; Titaley *et al.*, 2010; Mpembeni *et al.*, 2007; Ohashi *et al.*, 2014). For example, a study in Ghana (Speizer *et al.*, 2014) reported that women could only use facility-based delivery services if they obtained permission from their husbands. Moreover, Mpembeni *et al.* (2007) showed that single Tanzanian women with some financial autonomy were more likely to use institutional delivery services than were married women. Nevertheless, there is a lack of evidence on husbands’ perspectives and their role in supporting their families to seek healthcare services. One qualitative study conducted in Egypt (Ohashi *et al.*, 2014) and involving women of reproductive age, as well as men and elderly women, showed that husbands played an important role in supporting their families and assisting their wives in seeking healthcare services.

The aim of the present study was to explore husbands’ experience and perceptions regarding their role as decision makers and providers for their wives’ healthcare needs during pregnancy and childbirth, as well as the use of MWHs. This understanding is important because it will provide a starting point for interventions focusing on improving use of MWHs and facility-based skilled delivery services in rural Zambia.

Methods

Materials

A qualitative study was undertaken in Kalomo District, Zambia. This district has an estimated population of 275 779, with an annual growth rate of 4.4%. The district has two first-level referral hospitals, 34 health centers, and several health posts. Of the 34 health centers, only 10 have MWHs. Ethical approval was granted by the Zambian Tropical Diseases Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee. All participants provided written consent.

Study participants – husbands of women who had attended a health center with a MWH – were purposefully selected at health centers with MWHs using multistage convenience sampling. First, all 10 health centers with MWHs in the district were identified. Second, senior health officers in charge of these centers were contacted regarding the purpose of the study and were asked to inform mothers attending the under-five clinic about the study. Mothers were then advised to inform their husbands about the study and ask them for possible participation. If they were willing to participate, they attended the clinic with their wives during their next under-five clinic visit.

Convenience sampling was used to increase the likelihood of selecting husbands who met the inclusion criteria. Men aged 18-50 years, married to a woman of reproductive age (i.e. aged 15-45 years) who had given birth within the last year (either at the clinic or at home), and who had resided in the area for more than 6 months were eligible for inclusion. Those who had lived in the district for less than 6 months were excluded because it was considered that these husbands would not have sufficient local experience of MWHs and facility-based delivery. Respondents were selected from different health centers, villages, and families to allow researchers to elicit and encounter as many different views as possible from the selected respondents. Thus, a holistic investigation of the differences in roles and perceptions on the basis of husbands' experiences with the MWHs was possible, providing in-depth insight into the subject under investigation (King and Horrocks, 2010).

Between April 1 and May 31, 2014, interviews were conducted in Tonga by two trained research assistants outside the health center premises, normally under the shade of a tree. To ensure privacy and confidentiality, each in-depth interview was conducted in a quiet place, and lasted 30-50 minutes. Written consent was obtained from participants before the interviews by requesting them to read and sign the consent form, which had been translated into Tonga. Additionally, respondents were asked to complete a short demographic questionnaire. For those who could not read and write, the consent form and the questionnaire were read to them and completed by a research assistant. The interview was conducted by one research assistant, while the second recorded the session using a digital voice recorder.

A semi-structured interview guide, translated into Tonga, was developed on the basis of a literature review and researchers' experiences and findings from their previous studies in the area (Sialubanje *et al.*, 2014a, 2014b, 2015). Husbands' perceptions about the perceived

benefits and barriers, decision-making process, and their roles in their wives' use of MWHs, were explored. Interviews continued until data saturation was achieved.

The research assistants transcribed and translated the voice recordings into English, and 20% of the transcripts were back-translated into Tonga to check the translation accuracy. The Tonga and English versions were compared for differences and similarities by the research assistants while listening to the original voice recording. Following proof-reading and corrections, transcripts were saved on a password-protected computer, exported into Nvivo10 MAC for processing, and data were coded and categorized. An inductive approach was used to identify the key themes by content-analyzing and grouping of all the similar statements made with respect to particular themes. The demographic information of the respondents was analyzed using descriptive statistics in SPSS version 21 (IBM, Armonk, NY, USA).

Results

A total of 24 in-depth interviews were conducted with husbands in seven health centers, after which data saturation was achieved. The research team decided to stop the interviews and, thus, leave out the remaining three selected clinics. Table 1 summarizes the demographic characteristics of the respondents.

Most husbands perceived many benefits from their wives' use of MWHs, including the belief that MWHs increased access to facility-based skilled birth assistance and mitigated the long distances and transport costs to health facilities. Staying in the MWHs made it easy for pregnant women to walk to the clinic to see the nurse or midwife as soon as they knew they were in labor. One husband aged 39 years stated "The mothers' shelters provide a lot of benefits for the mother and the child, because it will be easy for them to walk to the clinic and tell the nurses that they need help." Moreover, nurses and midwives could easily identify women with a high risk of labor complications and provide timely treatment. Those with complications could then be referred to the district hospital for further management and care.

Furthermore, husbands indicated that MWHs provided family accommodation facilities, allowing pregnant women to be accompanied by a family member or her young children if she had no one to leave them with at home. By contrast, most husbands mentioned that their wives did not make use of the MWH during their previous pregnancy. The main barriers that affected the decision to use MWHs were the lack of funds for food, cleaning materials, and clothes for the mother and neonate needed during and after labor. One man aged 36 years commented:

"The main challenge being faced by husbands in this community is lack of money. Most of the times women don't come to the mothers' shelter to wait for delivery because their husbands fail to provide them with food and other requirements"

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Husbands believed that health center staff would refuse to attend to their wives if they did not meet the necessary requirements. Consequently, husbands who failed to secure the required resources either delayed their wives attendance to MWHs or simply did not allow it.

Table 1: Background characteristics of the respondents (n=24 husbands).

Variable	n (%) or mean(SD)
Mean age (in years)	35.02 (8.60)
Number of Children	3.22 (2.21)
Marital status	
Single	2 (8%)
Married	22 (92%)
Level of education (years)	
Lower primary (1-4)	1 (4%)
Upper primary (5-7)	7 (29%)
Junior secondary (8-9)	8 (33%)
Senior secondary (10-12)	8 (33%)
Occupation	
Farmer	15 (62%)
Self-employed	5 (21%)
Formal employment	4 (17%)
Income per month in Zambian Kwacha	
No income	1 (4%)
Less than K100	5 (21%)
K100-250	10 (42%)
K251-500	4 (17%)
K501-1000	4 (17%)
Mean walking time to the clinic in minutes	160 (20)
Place of delivery for the youngest child	
Home	12 (50%)
Health centre	4 (17%)
Hospital	8 (33%)
Use of MWHs	
Yes	11 (46%)
No	13 (54%)
Complications during previous child birth	
Yes	7 (29%)
No	17 (71%)

A further barrier affecting the use of MWHs was their poor and deplorable state. Most MWHs lacked basic services, including sleeping space, beds, mattresses, blankets or bedding, water, and toilets, as well as good sanitary conditions. The poor quality of healthcare services at the MWHs was another important barrier to MWH use. Husbands who believed that MWH healthcare staff did not conduct regular visits to check on the condition of pregnant women did not allow their wives to use the services. In addition, the lack of an ambulance at the health center discouraged husbands from allowing MWH use. Husbands believed that health centers that did not have ambulances depended on those from the district hospital, which took a long time to arrive and women with complications had to be transported for long distances on bad roads.

The decision-making process regarding use of MWHs mainly involved the couple discussing preparations for the newborn and whether the woman should attend the MWH. However, husbands were generally responsible for the final decision after taking into consideration the potential risks of labor complications following a home delivery, the benefits of MWH attendance and delivery, and the factors hindering MWH use, including the lack of funds, the poor state of the clinics, the quality of the services provided, and failing to find a family member to look after the children at home. Some husbands who were concerned about these barriers did not allow their wives to use MWHs.

“I am the one to decide. Since it would lessen my burdens, I would allow my wife to go and stay at the shelter” (Husband, aged 28)

“We sit down with my wife and discuss the issue at hand and agree. I advise her that now you are approaching, you have to stay at the mothers’ shelter” (Husband, aged 39)

However, some husbands indicated that they would allow their wives to make the final decision and that some women had indeed done so. For unmarried women, parents commonly made the final decision; sisters, mothers, mothers-in-law, and grandmothers played an important part for young couples. Some husbands indicated that they consulted friends and neighbors.

The husbands’ major roles and responsibilities included final decision-making on MWH use, securing the funds necessary to provide for the materials required during and after labor, and ensuring the availability of food for the wife and any accompanying relatives staying at the MWH. Moreover, husbands were temporarily responsible for the children along with an designated family member. One husband aged 27 years stated “His duty is to make sure that he provides everything. He is the one to buy everything that the mother and child will need until she delivers and goes back home”.

Discussion

The aim of the present study was to explore husbands' experiences and perceptions regarding the use of MWHs in Kalomo District, Zambia. Overall, the findings show that husbands had a positive attitude towards MWHs and perceived benefits from using this service, including mitigating long distance travel and improving access to facility-based delivery services. Husbands believed that MWHs are an important means to improving access to skilled and facility-based delivery and to prevent complications during labor and delivery. However, several challenges, including a lack of financial resources and concerns about the availability and quality of social and medical services in the MWHs, made it difficult for most husbands to support their wives to use the homes.

Their main role during pregnancy and childbirth was that of final decision making regarding their wife's use of MWHs, securing funds for food and transport, the provision of cleaning materials and clothes for the mother and newborn, and finding someone to take care of the children in the wife's absence. These findings are in line with previous research in Zambia (Sialubanje *et al.*, 2015), as well as with a study from Egypt (Ohashi *et al.*, 2014), which reported that husbands played an important part in providing for their wives during pregnancy and childbirth, and in encouraging them to use appropriate health services. By contrast with previous studies (Sialubanje *et al.*, 2014a; Sialubanje *et al.*, 2015; Speizer *et al.*, 2014; Titaley *et al.*, 2010;10; Mpembeni *et al.*, 2007; Story *et al.*, 2012), which suggested that husbands' decision-making role posed important barriers to women's use of facility-based delivery services, the present findings show that husbands have an important role in fostering women's health-seeking behavior. Interestingly, although husbands often make the final decision about whether or not the woman should use the MWHs, these decisions are not unilateral. Rather, the decision-making process involves the husband and wife discussing preparations for childbirth, taking into consideration several factors, including the potential risks of labor complications following a home delivery and the benefits of MWH use and a facility-based birth. Moreover, some women made the final decision and merely informed their husbands; in some cases, decisions were made in consultation with family members. This finding is consistent with those of previous studies in Zambia (Sialubanje *et al.*, 2015) and in other countries (Ohashi *et al.*, 2014), which showed that maternal health issues were often jointly discussed by husbands and wives.

Consistent with previous studies from Zambia (Gabrysch *et al.*, 2011; Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004) and other low-income countries (Titaley *et al.*, 2010; Mpembeni *et al.*, 2007), the present findings show that most respondents' wives did not use MWHs during their previous pregnancy because of reasons such as the perceived poor state and low quality of services in the MWHs and the non-availability of nurses and midwives to monitor pregnant women's condition and ensure their medical safety. Consequently, couples who were not satisfied with the quality of services in the MWHs did not use these services. These findings are in line with previous studies (Gabrysch *et al.*, 2011; Sialubanje *et al.*, 2014a, 2014b; Stekelenburg *et al.*, 2004; Sialubanje *et al.*, 2015; Titaley *et al.*, 2010).

al., 2010; Mpembeni *et al.*, 2007 reporting on the low use of MWHs mainly because of their poor state and a lack of basic social and medical services.

Moreover, most husbands faced several important challenges, including the lack of financial resources, which made it difficult for them to provide for their wives who intended to use MWHs. Consequently, husbands who failed to secure the requisite funds often did not allow their wives to use MWHs or did so at the last minute. This finding is in line with previous studies (Gabrysch *et al.*, 201; Sialubanje *et al.*, 2014a, 2014b; Wilson *et al.*, 1997; Speizer, 2014; Story *et al.*, 212) indicating that a delay in decision making at the family level was one of the important factors negatively affecting the use of various maternal healthcare services. In addition, this result stresses the importance of economic factors in influencing decisions regarding healthcare services use (Gabrysch *et al.*, 201; Sialubanje *et al.*, 2014a, 2014b; Millard *et al.*, 1991; Titaley *et al.*, 2010; Mpembeni *et al.*, 2007).

Some potential limitations to the present study should be noted. First, the findings focus solely on the experience of respondents recruited through wives attending the under-five clinic services at health centers with MWHs. Therefore, the experiences of husbands whose wives did not use the under-five clinic services or from health centers without MWHs were not explored. Thus, the results might not be applicable to individuals from communities/districts where MWH services are not available.

Nevertheless, the current findings highlight important barriers perceived by husbands, including the lack of financial resources, the poor quality of the MWHs, and the low quality of the healthcare services and medical safety provided for pregnant women staying at these homes. These factors should be considered as important intervention targets for improving access to MWHs and skilled birth attendance in rural Zambia.



Chapter 7

Personal and environmental factors associated with the intention to utilise maternity waiting homes in rural Zambia

To be submitted as:

Sialubanje C, Massar K, Hamer ,DH, and Ruiters, RAC. *Personal and environmental factors associated with the intention to utilise maternity waiting homes in rural Zambia*

Abstract

The aim of the current study was to confirm the relevance of the psychosocial and environmental factors in explaining the intention to use MWH and compare scores on these factors between those with access and those who do not have access to MWHs. We conducted a cross-sectional study using an interviewer-administered questionnaire. Data were collected between 1st July and 31st August, 2014, among 340 women of reproductive age in 15 rural health centres in Kalomo district, Zambia. Questions included socio-demographic and psychosocial variables. Strong negatively skewed data patterns on the measures of interest prevented the use of linear regression analysis. Instead, scores on the study measures were dichotomised and tests of association (chi square, logistic regression analysis, odds ratio) were conducted to test the association between psychosocial measures and intention to use MWHs, and to test the difference in proportions for those with and without access to MWHs. Compared to the respondents from health centres without MWHs, those from centres with MWHs were more likely to express a willingness to use MWHs ($_{a}OR=5.11$; 95%CI (1.48-17.63)), perceive benefits from using a MWH ($_{a}OR=8.78$; 95%CI (3.16-24.39)), perceive staying in a MWH as enjoyable ($_{a}OR=4.37$; 95%CI (2.41-7.91)), perceive more social pressure from the important others to use MWH ($_{a}OR=30.18$; 95%CI (13.18-69.21)), perceive personal risk from pregnancy and childbirth related complications ($_{a}OR=11.54$; 95%CI (2.51-53.11)), go and stay at the clinic before delivery ($_{a}OR=1.76$; 95%CI (1.04-2.98)), give birth at a health facility ($_{a}OR=3.26$; 95%CI (1.79-5.94)) and were less likely to receive care from a skilled birth attendant ($_{a}OR=3.16$; 95%CI (1.78-5.62)). In contrast, these respondents were less likely to perceive positive descriptive norms towards the use of a MWH ($_{a}OR=0.49$; 95%CI (0.26-0.94)), and less likely to perceive barriers regarding the use of a MWH ($_{a}OR=0.28$; 95%CI (0.16-0.48)). These findings provide the basis for interventions focusing on improving use of MWHs. They highlight the need to focus on raising awareness about risk perception, promoting family and community support, providing and improving living conditions in the MWHs, and mitigating logistical barriers.

Introduction

Long distances to health facilities and high transportation costs are important barriers limiting access to skilled birth attendance services in the rural areas of Zambia. There many women (53%) still give birth at home and most (62%) do not receive assistance from skilled birth attendants (CSO, 2009; Sialubanje *et al.*, 2014a, 2014b; Gabrysch *et al.*, 2011), causing high maternal mortality (MMR) in the country (Stekelenburg *et al.*, 2004). Mitigating these barriers could improve maternal and new born health outcomes in the rural areas of the country (Sialubanje *et al.*, 2015a, 2016; Thaddeus and Maine, 1994).

To overcome physical and logistical barriers to medical services, maternity waiting homes (MWHs) have been established in many developing countries, including Zambia (Van Lonkhuijzen *et al.*, 2003; Millard *et al.*, 1991). The World Health Organization (WHO) has defined MWHs as “[...] residential facilities, located near a qualified medical establishment, where women living far from the healthcare facility and those with high-risk pregnancies can wait for their delivery and be transferred to a nearby medical facility shortly before delivery, or earlier, should complications arise” (WHO, 1996). Studies investigating the effectiveness of MWHs have reported positive results. For example, studies from Zimbabwe (Millard *et al.*, 1991), Ethiopia (Kelly *et al.*, 2010), Eritrea (Andemichael *et al.*, 2009) and Liberia (Lori *et al.*, 2013) as well as a WHO report (1996) indicate that MWHs improved pregnant women’s access to healthcare facilities, led to an increase in the number of women receiving skilled birth attendance, and reduced maternal mortality in the area. Additionally, maternal and new born health outcomes were improved among women who stayed in the MWHs during the last period of their pregnancy. The WHO report (1996) also showed that MWHs were essential in the management of women with high-risk pregnancies. Moreover, a study conducted in rural Zambia (Van Lonkhuijzen *et al.*, 2003) in which women using MWHs and those who did not were compared, showed that, although women using MWHs had higher maternal risk factors (83%) compared to those who did not use MWHs (53%), there were no differences in maternal outcomes between the two groups after delivery, suggesting that MWHs are effective in reducing labour complications.

Studies exploring women’s perceptions towards MWHs (Stekelenburg *et al.*, 2004; Sialubanje *et al.*, 2015a, 2016; Lori *et al.*, 2013) show that both women with access to health centres with a MWH and those with access to health centres without a MWH were aware of this service, had a positive attitude towards MWHs, and expressed willingness to stay in them while waiting for labour. For example, in a recent study (Sialubanje *et al.*, 2015a) we explored women’s beliefs on facilitators and barriers to the utilization of MWHs in rural Zambia and revealed that both women with access to a MWH and those without access appreciated the important role MWHs play in improving access to skilled birth attendance and maternal health outcomes. Additionally, husbands perceived many potential benefits of MWHs as well (Sialubanje *et al.*, 2016), including improved access to facility-based skilled delivery services and treatment in case of labor complications. Not only pregnant women and their husbands but also healthcare providers see the benefits of MWHs, which was, for

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example, reported in a study evaluating a community trial on MWHs in Liberia (Lori *et al.*, 2013). This study showed that traditional midwives participating in the study believed that MWHs provided a safe environment for pregnant women preparing for delivery, allowed them to stay close to the healthcare facilities and helped them rest before giving birth. The study also showed that, compared to the communities without MWHs, those with MWHs experienced a significant increase in the number of facility-based births from baseline to post-intervention.

In contrast to these positive views, studies from Zambia (Sialubanje *et al.*, 2015a, 2016) and Ghana (Wilson *et al.*, 1997) reported low utilization of MWHs. Among the reasons for low utilization of MWHs reported in the Zambian studies were non-availability of funds to buy the requirements for the baby and mother to use during labour at the clinic, concerns about needing someone to remain at home and take care of the children and husband, and concerns about the poor state and lack of basic social and healthcare needs in the MWHs. It was reported that the MWHs lacked adequate sleeping space, beddings, water and sanitary services, food and cooking facilities as well as lack of visits by nurses and midwives to ensure the medical safety of women staying in the MWHs. Similarly, the study from Ghana (Wilson *et al.*, 1997) reported the costs associated with staying in a MWH, the hardship of staying away from home and the absence of health personnel in healthcare facilities to be the main reasons for the low utilization of MWHs.

Despite providing important insight into both the perceived benefits of using MWHs as well as the reasons for poor utilization of these services, these studies were exploratory and qualitative in design. Currently, the association between the presence of MWHs and the personal and environmental factors that affect its use is unknown. Moreover, it is not known whether the strength of this association differs between the respondents who have access to health centres with a MWH and those who have access to health centres without. The purpose of the current study, therefore, was to confirm the association between the psychosocial and environmental factors in explaining the intention to use MWH and to compare scores on these factors between those with access and those who do not have access to MWHs in rural Zambia. Insight into this knowledge is important for the design of educational and public health interventions focusing on improving utilization of MWHs in rural Zambia through the erection and use of MWHs. To our knowledge, no such studies have been conducted in Zambia before.

Methods

Study design and setting

The study was quantitative and cross-sectional in design. It was conducted in fifteen health centre catchment areas of Kalomo district, Zambia. Kalomo district is located 360 km south of the capital Lusaka, and covers a total surface area of 15 000 km². It has an estimated population of 275 779 (CSO, 2010) with an annual growth rate of 4.4%. Most of the

population (92%) live in rural areas with subsistence farming and cattle rearing being the major economic activities. The district is one of the poorest in the country, with more than 70% of its population living on less than a dollar per day (CSO, 2007). Administratively, the district is divided into three constituencies, four chiefdoms and twenty political wards. The health system in the district comprises two hospitals, thirty-four health centres and several health posts. Furthermore, only 52% of the health care facilities have access to reliable electricity (Hamer *et al.*, 2012). The district is one of the rural districts in the country with low maternal healthcare service utilization rates, where less than 30% of the women receive assistance from a skilled birth attendant in a health facility, compared with 80% of the births in urban women (CSO, 2009; Sialubanje *et al.*, 2014a, 2014b; Hamer *et al.*, 2012). The main players in the maternal health programmes are the Ministry of Health, missionaries, non-governmental organizations, community leaders and various community-based health agents, including traditional birth attendants.

Study population

The study participants were selected from women of reproductive age (mean age 25.60, SD=6.85). Of these, 203 women (Mean age=24.69, SD=6.61) from health facilities with a MWH, and 137 women (Mean age=26.94, SD=7.01) from health facilities without a MWH, completed the survey. To be eligible to participate in the interview, women must have had resided in the area for more than six months. Those who had lived there for less than six months were excluded because the investigators thought these women would not have had enough local experience on utilization of MWHs in the area.

Sampling techniques

The study utilised a multi-stage convenience sampling method. To begin with, all the ten health centres with a MWH in the district were identified and included in the research with the help of the district managers at the District Medical Office. In addition, five out of a total 25 health centres without a MWH were also purposefully selected and included in the study. A total of 14 villages from the fourteen rural health centres and one compound from the semi-urban health centre were sampled. Within these villages and compound, all eligible women of reproductive age, who had given birth less than one year prior to the survey, were approached. Because of high illiteracy levels in the area, an interviewer-administered questionnaire was used which had been translated into Tonga. Women who were able to read were allowed to go through the questionnaire by themselves; the interviewer merely confirmed whether the questionnaire was correctly and completely answered.

Ethical considerations

Ethical approval for the study was obtained from the Tropical Disease Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia. Before starting the survey, participants were informed about the aim of the study: that is, to confirm the association between the presence of a MWH and the personal and

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environmental factors that affect use of MWHs in rural Zambia that was identified in previous qualitative studies and to test whether this association differs between the respondents who have access to a health centre with a MWH and those who do not. It was also explained that all collected information was confidential and that the participant's name or the name of the village would not be written on the questionnaire or the informed consent form. Next, written consent was obtained by having the participants either sign the consent form or mark with an 'X'. Only respondents who gave informed consent completed the survey.

Data collection

Two trained research assistants who were supervised by the principal investigator collected the data. The research assistants were recruited from within Kalomo district and were both female, aged 22 and 25 respectively, and had a full grade 12 certificate. Female research assistants were preferred to male ones because of cultural reasons and in order to ensure optimal interaction with the mothers. Moreover, to minimise information concealment during the interview, research assistants spoke both English and the local language, Tonga. The research assistants received a one day face-to-face training on the study and the questionnaire.

A week before the interview, women were informed about the survey date by the village headmen and neighbourhood health committee members (NHC). On the agreed day, the principal investigator and the research assistants travelled to the respective health centres from which the research assistants were directed into the households by the NHC members and community volunteers. All the interviews took place in the participant's home or at a nearby convenient place – normally a quiet place under a tree, a few meters from the participant's house. Each interview lasted between thirty to forty minutes.

Measures

The questionnaire was based on variables described by social cognitive theories of human behavior, including the theory of Reasoned Action Approach (Fishbein and Ajzen, 2010) and the Health Belief Model (Conner & Norman, 2005) as well as findings from our previous qualitative studies (Sialubanje *et al.*, 2014a, 2015, 2016). It was first developed in English, translated into Tonga by an independent bi-lingual expert, and then back-translated into English. The final version of the questionnaire was in Tonga. After general instructions were provided, socio-demographic variables (i.e. age, marital status, number of children, place of residence, distance to the nearest health centre, and level of education, occupation and level of income) were measured. Next, past health-care seeking behavior (i.e. date of first ANC booking, number of ANC visits, place of delivery and postnatal care use) was assessed. The last section consisted of the measures of the psychosocial variables – attitude, perceived social norms, perceived behavioral control. Our main outcome variable was intention to use a MWH during a next pregnancy. All items were answered on a 5-point Likert scales ranging from 1=fully disagree to 5=fully agree, or similar labels.

We used factor analysis to check whether items that were planned to measure a particular psychosocial construct combined into one factor or not. Items within a measure that showed strong internal consistency (Cronbach's alpha $>.6$ or $r>.40$) were combined and averaged into one index. In case items did not combine into one index, factor analyses were conducted using principal axis factoring as an extraction method, and an Oblimin rotation. After inspection of the scree plot, sum measures were created with Eigenvalue score of 1.0 or higher and including those items that had factor loadings of 0.4 or higher. (See Appendix for the different items used in the present study and how they were clustered to measure underlying psychosocial constructs.)

Intention was measured using one item: "If I am pregnant again and due for labour, I will make efforts to go and stay at the maternity waiting home as I wait for labour at the clinic". In total, twenty five items were constructed to measure attitude. Factor and reliability analyses revealed two variables: *cognitive attitude towards maternity waiting homes* (seventeen items, $\alpha=.75$). The other attitude variable was *affective attitude toward staying in a maternity waiting home* (seven items, $\alpha=.72$). Similarly, factor and reliability analyses were performed on the 22 items providing an estimate of perceived social norms, which resulted in two variables: one of these was *descriptive social norms* towards MWHs use (thirteen items, $\alpha=.60$). The other social norm variable was *injunctive social norms* towards MWHs (nine items, $\alpha=.82$). Seventeen items were constructed to measure perceived behavioural control (PBC). Factor and reliability analyses resulted in one variable (fifteen items, $\alpha=.60$). The five items measuring risk perception were also averaged into one variable, (five items, $\alpha=.83$). Finally, perceived barriers towards using MWHs were measured using seventeen items. Factor analysis revealed one variable, (fourteen items, $\alpha=.70$).

Data analysis

Descriptive statistics were used to compute percentages of respondents' demographic and past behaviour characteristics. After inspection of the data and descriptive analysis, we noticed that the data were severely negatively skewed and the assumption of normality was violated. Instead, we performed a median split procedure on the psychosocial measures – such that scores including the median and below were dummy-coded as 0 (representing low to moderate scores on the behavioural intention and other psychosocial measures); and scores above the median were dummy-coded as 1 (representing high scores in behavioural intention and other psychosocial measures).

To investigate the univariate association between the psychosocial measures and the intention to use a MWH, and to compare scores on psychosocial measures, sociodemographic variables and past behaviour between those with access and those who do not have access to MWHs, chi-square tests and logistic regression analyses were used. Crude odds ratio (OR) with 95% confidence intervals were computed to estimate the effect size. Next, an independent *t*-test was computed to test whether the respondents from the two groups differed with regard to sociodemographic and economic factors such as age, number of children, and distance to the nearest health centre.

Finally, adjusted odds ratios were calculated to control for confounding due to age, parity, and distance to the nearest health center. We planned to test associations of psychosocial measures with intention to use MWHs while controlling for social demographic variables and past health seeking behavior. However, dichotomization of the intention resulted in still very skewed distribution with 95% scoring 1 (a score of 5 on the intention measure) and 5% scoring 0 (4 or lower on the intention measure). This prevented us from doing multivariate logistic regression analysis with intention as outcome variable.

Results

Respondent characteristics

The final sample comprised 340 respondents. They had a mean age of 25.60 (SD=6.85) years and an average of 3 children (2.08). The large majority of the respondents (84.4%) were married. About one third (37.4%) of the respondents had upper primary school education, 39.1% had completed junior secondary school, 10% had completed secondary school education, and 2.6% had never attended school at all. Concerning occupation, the majority (62%) were farmers and almost all respondents (76.5%) had an average income of less than 500 Kwacha (50 US dollar) per month. The large majority of the sample was living in rural areas with an average walking time to the nearest health centre of 1.5 hours (see Table 2 for an overview).

With respect to past health behaviour, almost all respondents (99%) had attended antenatal care (ANC) during their previous pregnancy, although many (70.9%) started their first ANC visits late (mean gestational age at first ANC booking=4.33 months). Almost half of the women (42.4%) did not complete the recommended 4-visit-ANC schedule (mean number of ANC visits=3.76). Regarding the place of delivery for the youngest child, most respondents (80%) had delivered at a health facility while 17% had delivered at home and 3.0% had delivered on the way to the health centre. Most respondents (70.6%) did not stay at the clinic (or in a MWH) before delivery; they waited for labour from home and only went to the clinic when they were in established labour. Only 29.9% of the women that delivered at the clinic stayed in the MWH and 7.01% stayed in the ward. For the women who did stay at the clinic before giving birth, the average duration of stay at the clinic was about 8 weeks (mean=7.7 weeks, SD=9.91). Most respondents (79.4%) had no complications after delivery, if there were complications, participants mentioned bleeding (60%), obstructed labour (18.6%), and eclampsia (10%) (see Table 3 for a complete overview).

Independent *t*-tests showed that, compared to the respondents from the health centres without MWHs, those from health centres with MWHs were significantly younger (Cohen's $d=.3$), had fewer children (Cohen's $d=.3$), and lived closer to the health centres (Cohen's $d=.3$) (Cohen, 1988). There was no significant difference between the two groups with regard to marital status, level of education and level of income (Table 3).

Table 1: Sociodemographic characteristics of the respondents (n=340).

Variable	Mean (SD) n(%)
Age	25.60 (6.85)
Children	3.05 (2.08)
Marital status	
Single	45 (13.2%)
Married	287 (84.4%)
Separated	1 (0.3%)
Divorced	3 (0.9%)
Widow	4 (1.2%)
Education (years)	
None	9 (2.6%)
1-4	31 (9.1%)
5-7	127 (37.4%)
8-9	133 (39.1%)
10-12	35 (10.3%)
College	4 (1.2%)
University	1 (0.3%)
Occupation	
Dependant	40 (11.8%)
House wife	81 (23.8%)
Farmer	130 (38.2%)
Business woman	57 (16.8%)
Not employed	1 (0.3%)
Formal Employment	30 (8.8%)
Other	1 (0.3%)
Income(in Zambian Kwacha)	
<100	148 (43.5%)
100-249	54 (15.9%)
250-499	58 (17.1%)
500-999	35 (10.3%)
>1000	45 (13.2%)
Distance to the nearest clinic	12.31 (10.40)
Estimated walking time (in minutes)	85.9 (65.57)

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Table 2: Utilisation of maternal health services during previous pregnancy.

Variable	Mean (SD) n(%)
ANC use	
Yes	337 (99.1%)
No	3 (0.9%)
ANC booking	4.33 (1.33)
Number of ANC visits	3.76 (1.01)
Any complications during ANC	
Yes	80 (23.5%)
No	260 (76.5%)
Type of complications	
PV bleeding	13 (16.3%)
Abdominal pain	36 (45%)
Abnormal lie	7 (8.8%)
High Blood Pressure	15 (18.7%)
High blood sugar level	1 (1.2%)
Baby not growing well	3 (3.7%)
Baby dead in the uterus	5 (6.3%)
Place of delivery:	
Home	69 (20.3%)
Health Centre	271 (79.7%)
MWH present at place (health centre) of delivery	
Yes	250 (92.3%)
No	21 (7.7%)
Stay at the clinic before delivery	
Yes	100 (29.4%)
No	240 (70.6%)
Place of stay before delivery	
Ward	19 (19%)
Mothers' shelter	81 (81%)
Birth attendant	
Doctor	33 (9.7%)
Clinical Officer	13 (3.8%)
Nurse	222 (65.3%)
TBAs	32 (9.5%)
Parent	20 (5.9%)
Mother in-law	11 (3.2%)
Neighbour	9 (2.6%)

Table 2 (Continued)

Variable	Mean (SD) n(%)
Complications after delivery	
Yes	70 (20.6%)
No	270 (79.4%)
Type of complication after delivery:	
Bleeding	42 (60%)
Retained placenta	2 (2.9%)
High Blood Pressure	4 (5.7%)
Fitting	3 (4.3%)
Obstructed labour	13 (18.6%)
Ruptured uterus	1 (1.4%)
Caesarian section	5 (7.1%)
Duration of stay at the clinic after delivery	13.60 (20.29)
Age of child at first PNC visit (in days)	7.43 (4.90)

Univariate association between access to MWH and psychosocial measures, and utilization of facility-based maternal healthcare services

Since our preliminary analyses showed differences between respondents from the health centres with MWHs and those from the health centres with regard to age, parity, marital status, distance to the nearest health centre, level of education, and level income, we controlled for these variables in our analysis by computing the adjusted odds ratios (aOR).

Compared to respondents from health centres without MWHs, those from centres with MWHs were more likely to express high intention to use MWHs ($aOR=5.11$; 95%CI (1.48-17.63)), perceive benefits from using a MWH ($aOR=8.78$; 95%CI (3.16-24.39)), have positive affective attitude towards staying in a MWH ($aOR=4.37$; 95%CI (2.41-7.91)), perceive pressure from important others regarding the use of MWH ($aOR=30.18$; 95%CI (13.16-69.21)), and perceive risks regarding pregnancy and childbirth related complications ($aOR=11.54$; 95%CI (2.51-53.11)). In contrast, these respondents were less likely to perceive descriptive norms ($aOR=0.49$; 95%CI (0.26-0.94)), and were less likely to perceive barriers to the use of MWH ($aOR=0.28$; 95%CI (0.16-0.48)) compared to the respondents from the health centres without MWHs. Moreover, respondents from the health centres with MWHs were more likely to stay at the clinic and wait for labour there ($aOR=1.76$; 95%CI (1.04-2.98)), give birth at a health facility ($aOR=3.26$; 95%CI (1.79-5.98)), and receive care from a skilled birth attendant (that is a doctor, nurse/midwife or clinical officer) ($aOR=3.16$; 95%CI (1.78-5.62)). Similarly, there was an association between the presence of a MWH and the likelihood of the woman developing complications during and after labour, however, this association just failed to reach the level of significance ($p=0.06$; $aOR=1.76$; 95%CI

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(0.96-3.21)). There was no significant association between MWH presence and perceived behavioral control ($p=.87$). Further, there was no significant association between living close to a health centre with a MWHs and staying at the MWH.

Table 3: Adjusted odds ratios (a OR) for the association between the presence of a MWH and use a MWH.

Variable	Mean (SD)/n(%)		a OR	95% CI		p
	MWH	No MWH		Lower Bound	Upper Bound	
Intention	199 (98%)	124 (90.5%)	4.58	1.39	15.17	.013
Cognitive Attitude	198 (97.5%)	110 (80.3%)	8.63	3.13	23.79	<.001
Affective Attitude	79 (38.9%)	23 (16.9%)	4.20	2.33	7.57	<.001
Descriptive Norms	161 (79.3%)	119 (86.9%)	0.49	0.26	0.94	.03
Injunctive Norms	194 (95.6%)	68 (49.6%)	27.09	12.23	60.03	<.001
PBC	95 (46.8%)	56 (40.9%)	1.06	0.66	1.69	<i>ns</i>
Risk Perception	201 (99%)	122 (89.1%)	11.63	2.52	53.62	.002
Perceived Barriers	58 (28.6%)	88 (64.2%)	0.27	0.16	0.47	<.001
Complications during ANC	52 (25.6%)	28 (20.4%)	1.38	0.79	2.4	<i>ns</i>
Stay at the clinic	68 (33.5%)	32 (23.4%)	1.78	1.05	3.02	.03
Stay at the MWH	56 (27.6%)	23 (16.8%)	2.30	0.71	7.39	<i>ns</i>
Place of delivery	179 (88.2%)	92 (67.2%)	3.36	1.85	6.12	<.001
Birth attendant	177 (87.2%)	91 (66.4%)	3.24	1.80	5.84	<.001
Complications during labour	48 (23.6%)	22 (16.1%)	1.75	0.96	3.19	<i>ns</i>

Note: Odds Ratios adjusted for age, parity, marital status, level of education, level of income, and distance to the nearest health centre.

Discussion

The aim of the current study was to confirm the relevance of the psychosocial and environmental factors in explaining the intention to use MWH and compare scores on these factors between those with access and those who do not have access to MWHs. In previous qualitative research, several factors were found to affect use of MWHs among respondents with access to health centres with MWH and those who do not (Sialubanje *et al.*, 2014a, 2015a, 2016). To this end, women who visited the health centres with MWHs and those who visited health centres without MWHs completed a survey measuring various psychosocial constructs as well as healthcare seeking behavior. Our results show that, compared to the respondents who used health centres without a MWH, those who used health centres with a MWH were more likely to express behavioral intention to use a MWH, perceived benefits from using a MWH, have positive affective attitude towards staying in a MWH. These

respondents were also more likely to perceive personal risks associated with pregnancy and childbirth complications, and to believe that important others in their community approved of their decision to use a MWH. Additionally, these women were also less likely to believe that important others in the community were using the MWHs (descriptive norms) and less likely to perceive barriers to the use of a MWH compared to the respondents who used health centres without MWHs. With respect to the utilization of facility-based maternal health services, compared to the women surveyed at the clinics without MWHs, women who used health centres with a MWH were more likely to go and stay at the clinic and wait for labour from there, more likely to give birth at a health facility, and more likely to receive care from a skilled birth attendant, such as a nurse/midwife or doctor. We did not find a significant association between the presence of a MWH and perceived behavioural control, or the respondents' use of antenatal and post-natal care services.

These findings are consistent with previous qualitative studies (Sialubanje *et al.*, 2014a, 2015a, 2016) which revealed that women in rural Zambia expressed a willingness to stay in a MWH if it were available. Further, these studies also showed that pregnant women had a positive attitude towards MWHs which seems to be based on their beliefs and outcome expectations. Interestingly, the current study indicates that, if a MWH is present at a healthcare facility, women's cognitive and affective attitude towards MWHs as well as their behavioural intention to use a MWH is more positive. This finding suggests that MWHs might play an important role in mitigating both the first and second delays (Sialubanje *et al.*, 2014b; 2015a, 2016; Gabrysch *et al.*, 2011; Stekelenburg *et al.*, 2004; Thaddeus & Maine, 1994) caused by the personal and environmental factors that influence pregnant women's decision to seek maternal healthcare services, especially for women living far from the healthcare facilities and those with high-risk pregnancies. Our finding is also consistent with the original idea of WHO for maternity waiting homes to improve access to maternal healthcare services (WHO, 1996).

Interestingly, the current findings suggest that women who have access to health centres with MWHs were significantly more likely to perceive injunctive norms to use MWHs than the women who had no access to MWHs. Further, although in previous studies (Sialubanje *et al.*, 2014a, 2014b, 2015a, 2015b) we found that older women with many children were more likely to comply with perceived social pressure to use or not use a MWH, in the current research, sociodemographic variables such as age, the number of children, marital status, distance to the nearest health centre, level of education or level of income did not influence this finding. The explanation for this finding could be that the mere presence of a MWH in the community and the respondents' observation of important others' use of the service – together with the health messages they receive at the health centre during antenatal care – might increase injunctive norms. This could lead respondents from the health centres with MWHs to perceive more pressure to use the service compared to their counterparts from the health centres without MWHs. Future research could focus on determining the source of the perception of injunctive norms in favour of using an intervention such as the MWH,

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as well as investigating the effect of the health promotion programmes on the perception of these norms.

Our findings show that, irrespective of whether a MWH was present or not, most respondents believed that they were personally at risk of developing pregnancy and labour complications. Further, all the respondents believed that these complications were very serious, both to the pregnant woman and to the unborn or newborn baby. Interestingly, the current findings show that respondents perceived their risk differently, depending on whether they lived close to a health centre with a MWH or not. Compared to the respondents who used a health centre without a MWH, those who used a health centre with a MWH were more than ten times more likely to believe they were personally at risk for pregnancy and childbirth related complications, and this effect remained after controlling for possible confounding variables such as age and number of children. This finding suggests a unique role MWH play in enhancing women's risk perception regarding the severity and personal susceptibility to pregnancy and childbirth-related complications. Again, one might hypothesise that increased health promotion efforts in the facilities where a MWH is present could cause these increased risk perceptions. However, the wide range of the confidence interval and the cross-sectional design of our study preclude drawing firm conclusions. Further research – preferably randomised control trials in design – is needed to confirm this association.

Women reported concerns about their husbands and children who remained at home when they were away at the MWH, a relative to accompany them and stay with at the MWH, the quality of services at the clinic and, particularly, about the availability of nurses and midwives to assist them in case of labour complications. Interestingly, women who were surveyed near a health centre without a MWH were almost four times more likely to perceive barriers compared to those from the health centres with MWHs. This suggests that women from the health centres without MWHs had to travel to distant health centres where they would find a MWH, and compared to the women who lived close to the health centres with MWHs, these women faced more difficulties finding resources to go and use whilst staying at the MWH. Again this finding highlights the need for public health programmes to focus on increasing the availability of MWHs in order to improve access to skilled birth attendance for all women, and to mitigate the important contextual barriers affecting utilization of such services.

Interestingly, the current findings show that less than one quarter (23.8%) of the respondents stayed at the MWH before delivery. This finding is consistent with our previous findings (Sialubanje *et al.*, 2015, 2016) as well as those from other developing countries, for example, Ghana (Wilson *et al.*, 1997), which reported low utilization of MWHs. This finding is in line with our qualitative studies (Sialubanje *et al.*, 2015, 2016) which reported low use of these services and concluded that expressing a higher behavioural intention to use a maternity waiting home, perceiving more benefits from using a MWH, or indeed living close to a health centre with a MWH do not entail that women will actually go there to stay and wait for delivery. Indeed, our current findings are also consistent with many studies

investigating the implementation of various health behaviours ranging from exercise to breast cancer screening (Armitage, 2004; Sheeran *et al.*, 2005; Sheeran & Oebell, 2000; Milne *et al.*, 2006) which have all reported the challenge of the “intention-behaviour gap”. For example, a study by Stekelenburg *et al.* (2006) in Zambia reported that although the majority of the women (94%) showed high intentions to use MWHs, only half of them (54%) actually did. However, although this finding highlights the complexity of women’s health seeking behavior (Chakraborty *et al.*, 2003) and suggests the need for public health interventions to not only focus on the target populations’ attitude and intention, but also to ensure that health promotion interventions target factors that might make it difficult for women to enact the intended behaviour, causality cannot be determined due to the cross-sectional nature of the current study.

However, our findings suggest that the presence of a MWH might positively affect pregnant women’s use of maternal healthcare services. For example, women who were surveyed at a health centres with MWHs were more likely to go and stay at the clinic and wait for labour from there, were more likely to give birth at a health centre and were more likely to receive care from a skilled birth attendant. Further, these women were less likely to develop complications during and after giving birth. This finding is consistent with previous studies (Stekelenburg *et al.*, 2004; Sialubanje *et al.*, 2015, 2016; Thaddeus and Maine, 1994; Van Lonkhuijzen *et al.*, 2003; Millard *et al.*, 1991; Kelly *et al.*, 2010; Andemichael *et al.*, 2009; Lori *et al.*, 2013; Wilson *et al.*, 1997) and the WHO report (1996) which suggested that MWHs could increase access to maternal healthcare services provided in health facilities, and which is in line with the WHO guidelines (WHO,1996) promoting the establishment of MWHs in rural areas to improve access to a healthcare facility and care from a skilled birth attendant. Further, this finding suggests that facility delivery and skilled birth care might play an important role in reducing labour complications and improving maternal and newborn health outcomes (Van Lonkhuijzen *et al.*, 2003; Millard *et al.*, 1991; WHO, 1996, 2005, 2015; Kelly *et al.*, 2010; Andemichael *et al.*, 2009; Lori *et al.*, 2013; UNFPA, 2013).

Limitations of the study

Although these results are promising, several potential limitations should be noted. First, these findings are based on the responses from the women who accepted to be interviewed, and in that sense may suffer from response bias. Indeed, our results were positively skewed and we could not use parametric tests (such as Pearson’s correlation) to investigate the associations of the psychosocial measures with behavioural intention, or to conduct multiple linear regression analysis to investigate the relative importance of the psychosocial measures and their contribution to the prediction of the behavioural intention. Further, we do not have information on the response rate as it was difficult to find or systematically document information on the housing units in the research areas. Second, most respondents (80%) that were interviewed had given birth at the clinic; only 17% had given birth at home. This may have introduced a selection bias since the experiences of many women who had given birth at home were not explored. However, since we were mainly interested

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in questioning women who had experience with MWHs and clinic delivery, most women who had given birth at home were not included in the survey. Moreover, the selection of the respondents who were familiar with MWHs and maternal healthcare services in general, might have led to the severe skewness of the responses that we experienced on the psychosocial measures, and that prevented us from doing more detailed analyses. Finally, since this is a cross-sectional study, it may not have the power to detect the effectiveness of MWHs in reducing maternal and newborn health complications. To draw such a conclusion, future research should focus on longitudinal and quasi-experimental study designs.

Conclusion

Despite these limitations, we believe our study has provided indications for the association between psychosocial and environmental factors and use of MWHs. It has also confirmed the association between the presence of MWHs and women's utilization of the maternal health services provided at the health centre. These results can serve as a basis for public health interventions focusing on improving access to facility-based skilled birth attendance. In particular, interventions should focus on raising awareness about the risk of pregnancy and labour complications, promoting family and community support, providing and improving living conditions in the MWHs, and mitigating logistical barriers.

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Increasing utilization of skilled facility-based maternal healthcare services in rural Zambia: The role of Safe Motherhood Action Groups

Submitted as:

Sialubanje C, Massar K, Horstkotte L, Hamer DH, Ruiters RAC. *Increasing utilization of skilled facility-based maternal healthcare services in rural Zambia: The role of Safe Motherhood Action Groups.*

Abstract

Community-centred health interventions such as the Safe Motherhood Action Groups (SMAGs) have potential lead to desired health behavioral change and favourable health outcomes. The aim of the current study, therefore, was to explore perspectives, roles, achievements and challenges of the SMAG program in Kalomo, Zambia. In-depth interviews (IDIs) were conducted in 7 health centers in Kalomo district between 1st April and 20th May, 2015 with 46 respondents comprising 22 SMAG members, 5 headmen, 10 mothers, 3 husbands, 5 nurses and 1 district maternal and child health coordinator. Perspectives on the selection, training, roles, achievements and challenges of the SMAG program were explored. Respondents were aware of the presence, selection, training and roles of the SMAG members and had a positive attitude towards the programme. They believed that the SMAG programme led to an increase in women's risk perception about pregnancy and childbirth-related complications. Further, participants believed that the programme led to an increase in the women's utilization of facility-based antenatal, delivery and postnatal care, resulted in improvement in maternal and newborn health outcomes. However, various challenges affected implementation of the SMAG programme. Among these were lack of material and financial support to the programme, lack of refresher training for SMAG members, poor quality of care in health care facilities due to a lack of maternity waiting homes, low staffing levels in health facilities, the poor state and small size of the labour wards, and lack of equipment to handle obstetric emergencies. Although various barriers affected its optimal implementation, our findings indicate that respondents had a positive attitude towards the SMAG program and that it might be an important community intervention for increasing utilization of facility-based skilled care and improving maternal and newborn health outcomes.

Introduction

Zambia is one of several sub-Saharan African countries with high numbers of unfavourable maternal health outcomes, with a maternal mortality ratio of 398 deaths per live births (WHO, 2014b; CSO, 2014). Moreover, utilization rates of maternal healthcare services in most parts of the country are low (CSO, 2014; Sialubanje *et al.*, 2014b; Stekelenburg *et al.* 2004; Gabrysch *et al.*, 2011). High transportation costs due to long distances to health care facilities, logistical challenges and perceived poor quality of care in rural Zambia are some of the barriers limiting access to facility-based delivery services and causing many women (53%) to give birth at home (Sialubanje *et al.*, 2014b; Stekelenburg *et al.* 2004; Gabrysch *et al.*, 2011). Further, limited access to skilled birth attendance and home deliveries are some of the major reasons for the high maternal mortality (WHO, 2005). Motivating pregnant women to stay in a maternity waiting home (MWH) during the last month of their pregnancy could improve access to facility-based delivery services as it would allow them to stay close to the clinic and enable them to easily walk to the labour ward when they are in labour (WHO, 1996, 2015; Sialubanje *et al.*, 2015a, 2016). Further, providing families with financial and material support to enable them to plan to save money for transport and purchase required supplies for the mother and baby during labour could mitigate logistical barriers and increase utilization of facility-based delivery services (Wang *et al.*, 2016).

However, in rural Zambia MWHs are not present in most health facilities and where they are present, they are in a poor state and most women avoid using them (Sialubanje *et al.*, 2015a, 2016). Moreover, several other factors were found to discourage women from using facility delivery care services in rural areas, such as a positive attitudes towards traditional birth attendants (TBAs), perceived low quality of maternal health care services in health care facilities, presence of male midwives, and a lack of equipment in the labour wards to manage complications (Sialubanje *et al.*, 2014a, 2015b). Moreover, studies showed that persisting socio-cultural norms encouraging women to depend on husbands for decision-making and provision of resources to buy requirements for the newborn child made it difficult for most women to give birth at a health facility because in many cases husbands failed to assist due to high poverty levels in rural areas (Sialubanje *et al.*, 2014a, 2015b).

To increase the utilization of maternal healthcare services, in 2003 the Zambian Ministry of Health (MOH) established Safe Motherhood Action Groups (SMAGs) as part of a national safe motherhood programme (Ensor *et al.*, 2014). The United Population Fund (UNFPA) initially supported the project in Northern Province before it was adopted as a national programme by the Zambian MOH (Ensor *et al.*, 2014). In 2012, the Zambian MOH extended the SMAG programme to 17 other districts, including Kalomo, where the current study took place, and trained SMAG members with support from the United States Agency for International Development (USAID) through its implementing partner, the Zambia Integrated Systems Strengthening Project (ZISSP) (Ben *et al.*, 2014).

The SMAGs are community-based volunteer groups that aim to reduce critical delays that occur at household level with regard to decision-making about seeking life-saving

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maternal care at health facilities (Ensor *et al.*, 2014; Ben *et al.*, 2014). They comprise various community volunteers such as TBAs, community health workers (CHWs), neighbourhood health committee (NHC) members, and women and husbands who are involved in maternal health programmes in the community. The SMAG members are specifically selected and trained to function as health promoters to deliver essential information on maternal healthcare services to men and women in the community in order to create awareness and personal risk perception of pregnancy, labour and newborn health complications. Moreover, they encourage pregnant women to go for regular antenatal care (ANC) visits, delivery, and postnatal care (PNC) in a health facility. They are also trained to identify maternal and newborn complications during pregnancy, delivery, and the postnatal period, and to refer women with complications to health facilities for professional care (Ensor *et al.*, 2014; Ben *et al.*, 2014). Moreover, the SMAG programme aims to ensure involvement of husbands in maternal healthcare services by encouraging men to participate as SMAG members (Ensor *et al.*, 2014; Ben *et al.*, 2014). Since SMAG members are selected by community members, specifically trained by healthcare staff to serve their local communities, and interact with both community members and healthcare facility staff, the SMAG programme aims to strengthen relationships between pregnant women and the healthcare facility staff. Thus, the SMAG programme aims to serve as a link between the community and the formal healthcare system on matters relating to maternal health (Chisenga *et al.*, 2014; Green *et al.*, 2014; Mbewe *et al.*, 2012).

Few studies have explored the effectiveness of SMAGs in improving the utilization of maternal and newborn health care services in low-income countries, including rural Zambia (Chisenga *et al.*, 2014). Moreover, available studies have reported some benefits and various challenges (Chisenga *et al.*, 2014). For example, a study evaluating the Saving Mothers Giving Life (SMGL) initiative in rural Zambia reported that institutional deliveries in Lundazi district, where SMAGs were active, increased from 40% in 2010 to 68% in 2013 (Chisenga *et al.*, 2014). Moreover, in their evaluation of the UK Aid funded Mobilizing Access to Maternal Health Services in Zambia (MAMaZ) programme that took place in six districts in Zambia, Ensor *et al.* (2014) reported a significant difference (26%) in deliveries between health care facilities that had communities with SMAGs compared to the districts without SMAGs. In contrast, in their baseline evaluation of the MAMaZ programme, Green *et al.* (2014) reported that SMAGs faced several difficulties and that members lacked understanding of the topics that they were supposed to educate community members on. Additionally, they were reported to possess minimal community mobilization skills, which reduced their capacity and impact in the community. Similarly, a study by Ben *et al.* (2014) found a positive association between the SMAG programme and an increase in the utilization of institutional deliveries in rural Zambia, but these authors reported inconclusive and limited evidence for an association between the SMAG program and utilization of ANC and PNC.

Despite the mixed findings on the role of the SMAGs to improve maternal and newborn health outcomes, previous research (Mbewe *et al.*, 2012; Rosato *et al.*, 2008) has shown that community-centred interventions that focus on community members' involvement

and participation are likely to be more accepted by local communities than vertical top-down interventions such as the national TB, HIV or malaria control programmes which are planned by health workers at the national level but only “imposed” on the community to adopt and implement. Further community-based interventions are more likely to lead to desired health behavioral change and favourable health outcomes (Rosato *et al.*, 2008).

However, it is currently unknown how the community members in rural Zambia perceive the SMAG programmes with regard to their expected need and programme effectiveness in increasing utilization of facility-based maternal healthcare services and improving maternal and newborn health outcomes. This study therefore aimed to explore how SMAGs are selected, trained and function. The study also aimed to explore the perceived SMAG programme’s achievements and the barriers it faces with regard to increasing utilization of maternal health services in Kalomo Zambia. An improved understanding of the SMAG programme is important as it will provide an evidence base for the design of national public health programmes that focus on designing community interventions to increase use of facility-based delivery services and improve maternal and newborn health outcomes in the country.

Methods

Study design

The study was qualitative in design and used in-depth interviews (IDIs) to provide a detailed understanding of the issues under investigation (Ary *et al.*, 2013; King and Horrocks, 2010). The Tropical Diseases Research Centre Ethics Review Committee and the Ministry of Health Research and Ethics Committee in Zambia granted ethical approval.

Study setting

The study was conducted in Kalomo district, located 360km south of the capital Lusaka, and covering a total surface area of 15 000 km². It has an estimated population of 275, 779 (CSO, 2010) with an annual growth rate of 4.4%. Most of the population (92%) live in rural areas with subsistence farming and cattle rearing being the major economic activities. The district is one of the poorest in the country, with more than 70% of its population living on less than a dollar per day (CSO, 2007). Administratively, the district is divided into three constituencies, four chiefdoms and twenty political wards. The health system in the district comprises two hospitals, thirty-four health centres and several health posts. Furthermore, only 52% of the health care facilities have access to reliable electricity (Hamer *et al.*, 2012). The district is one of the rural districts in the country with low maternal healthcare service utilization rates, where less than 30% of the women receive assistance from a skilled birth attendant in a health facility, compared with 80% of the births in urban women (WHO, 2014; CSO, 2014; Hamer *et al.*, 2012). The main players in the maternal health programmes are

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the MOH, missionaries, non-governmental organizations, community leaders and various community-based health agents, such as CHWs, NHCs and TBAs.

Study population and sampling techniques

The study population consisted of a total of 22 SMAG members, 5 nurses/ midwives, 5 local headmen, 1 district maternal and child health (MCH) coordinator, 10 mothers and 3 husbands. Selection of the health centres and study participants was done using a purposeful homogeneous sampling technique. This technique was used in order to select respondents who were familiar with the work of the local SMAGs, while, at the same time, allowing for recruitment of respondents with different characteristics and roles in the community in order to gain insight into the similarities and differences in their experiences (Ary *et al.*, 2013; King and Horrocks, 2010).

All district health centres which had trained and functional SMAGs were identified with the help of the district managers at the District Medical Office (DMO). Only ten out of thirty-six health centres in the district had functional SMAGs and all ten health centres were purposefully selected and included in the study. A month prior to the interview, the principal investigator contacted respective health centre in-charges to inform them about the study. Due to logistical challenges, it was not possible to hold meetings in person with respective health centre in-charges. Instead, they were contacted by phone and the purpose and objectives of the study were discussed in detail. The health centre in-charges were then asked to contact NHC members in their respective areas and to explain them the purpose and objectives of the study. The NHC members were in turn asked to identify SMAG members, local headmen, mothers and fathers who were willing to participate in the study and to explain its purpose – that is, the study aimed to gain insight into their experience and knowledge about SMAGs in their areas, and how these influenced husbands and their wives to use maternal health care services in the area. The in-charges were also asked to identify nurses/midwives from their respective health centres who would be willing to participate in the study. NHC members were asked to inform the respondents who were willing to participate in the study to come to an agreed upon place – normally at the village headman's residence – for the interview on an agreed upon date. The date for the interview was set by the health centre in-charge and then communicated to the research team through the principal investigator. The nurses/midwives were interviewed at their respective health centres.

The research instrument

A semi-structured interview guide was developed in English and translated into Tonga, the local language in the area. Before developing the interview guide, the research team conducted a preliminary literature search to familiarise themselves with the SMAG programme. Following the literature review, the principal investigator developed a preliminary interview guide which was shared with the other research team members. The document was also discussed with the district MCH coordinator during the district

meeting. Following the district meeting, the document was revised and sent for translation into Tonga, by a bi-lingual expert. The initial document was in English because this is the official language in Zambia. Moreover, it was easy to discuss the document with the other research team members who were not familiar with the local language.

The final document comprised four themes which the research team believed would provide insight into the subject under investigation. However, the research assistants were informed that these questions would just serve as a guide to structure the interview and that they were free to explore other issues that would arise from the discussions with the respondents. The same interview guide was used for headmen, husbands and mothers, but slightly adapted to fit the interviews with the SMAG members and the nurses/midwives.

The first theme focused on respondents' perspectives regarding the SMAG programme, and included questions on the selection and training of the SMAG members. The theme also included questions regarding the community members' awareness about and their attitude towards the SMAG programme. The second theme focused on the roles of the SMAG members in the community, while the third theme focused on the respondents' perceived successes of the programme. The third theme included questions on what the respondents believed the SMAG programme had achieved in the community with regard to awareness about the pregnancy and labour complications, and utilization of antenatal care, delivery and postnatal care services at the clinic. It also included questions on the husbands' participation in the programme and family support to their wives with regard to preparations for childbirth. The fourth theme focused on the respondents' perceived challenges of the SMAG intervention in the community.

Data collection

The interviews were conducted between the 7th of April and 23rd of May, 2015. The research team travelled to the health centre on the day of the interview. To ensure privacy and confidentiality, each IDI was conducted in a quiet place, usually outside the local headman's place, normally under a tree for shade. Each interview lasted between 30 and 50 minutes. The IDIs were conducted in Tonga, the local language in the area and were facilitated by two trained research assistants. Before each IDI, written consent was obtained from each participant by requesting them to read and sign the consent form, which had been translated from English into Tonga. Research assistants read the consent form aloud for those who could not read. Interviews with the nurses/midwives were conducted in English at the local health centre, normally in a quiet room or under a tree outside the health centre building.

After obtaining consent, research assistants requested each respondent to complete a short demographic questionnaire which included questions such as the respondents' age, number of children, marital status, level of education, occupation, level of income per month, place of delivery for the youngest child, history of complications during labour, and awareness about SMAGs. The last three questions were not applicable for the SMAGs members and the nurses/midwives. The questions were read to the respondent in Tonga

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and answers recorded by the research assistants. The nurses/midwives read and filled in the demographic questionnaire themselves.

After completing the questionnaire, the interviews were conducted by the two trained research assistants. One research assistant conducted the interview, while the second one recorded the interview using a digital voice recorder. The principal investigator attended interviews at random to ensure that the research team members consistently followed the data collection protocol.

After interviewing 46 respondents from the seven health centres, data saturation was achieved; that is, no more substantial information was obtained. At this point, the research team decided to stop the interviews and, thus, exclude the remaining three selected health centres.

Data analysis

Demographic information was entered into an Excel sheet and transferred into IBM SPSS Statistics 21 for analysis. Descriptive statistics and frequencies were used to summarise the demographics of the respondents (Table 1). The voice recordings from the interviews were transcribed and translated into English by the research assistants. To check for accuracy, a few transcripts (20%) were back – translated into Tonga. Members of the research team then compared the Tonga and English versions for differences and similarities while listening to the original voice recording. After verification of translation accuracy, each transcript was then thoroughly read by one research assistant while the other one was listening to the corresponding voice recording. Each translated transcript was compared with the handwritten field notes that the research assistants had prepared during the interviews. After proof-reading and making corrections, the transcripts were saved on a password-protected computer. The word documents were then exported into Nvivo 10 MAC for processing. The exported data were then coded and categories and key sub-themes were identified. In order to make it easy to compare the perspectives of different respondents, the data from the five groups (that is, nurses/midwives, SMAG members, headmen, husbands, and wives) of respondents were coded separately. Data analysis was based on the four predetermined themes. An inductive approach was used to derive the sub-themes from the main themes by content-analysis and grouping all the similar statements made with respect to particular themes. Several sub-themes emerged from the data analysis; all sub-themes are described below in the respective sections for the main research themes. Table 1 summarizes the demographic characteristics of the 46 participants included in the study.

Results

Theme 1: Perspectives about SMAGs

The first theme focused on the respondents' perspectives regarding the SMAG programme. It included respondents' awareness of and their attitude towards the SMAG members and the programme. The theme also highlights the selection and training of SMAG members.

Table 1: Sociodemographic characteristics of the respondents.

Variable	SMAGs (n=22)	Nurses/ midwives (n=5)	Headmen (n=5)	Husbands (n=3)	Mothers (n=10)
Mean age (SD)	46.56 (7.47)	33.5 (2.8)	54.4 (6.8)	28 (2.0)	25.6 (5.5)
Female	9 (40.9%)	100%	0 (0%)	0 (0%)	10 (100%)
Male	13 (59.1%)	0 (0%)	5 (100%)	0 (0%)	0 (0%)
Mean number of children	6 (2.8)	1.8 (2.1)	12.6 (6.8)	4.3 (4.1)	2.6 (2.1)
Marital status					
Married	16 (72.7%)	2 (40%)	5 (100%)	3 (100%)	10 (100%)
Divorced	2 (9.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Single	0 (0%)	2 (40%)	0 (0%)	0 (0%)	0 (0%)
Widow	4 (18.2%)	1 (20%)	0 (0%)	0 (0%)	0 (0%)
Level of education					
Never attended	0 (0%)	0 (0%)	0	1 (33.33%)	0 (0%)
Lower primary (1-4)	0(0%)	0 (0%)	0	0 (0%)	0 (0%)
Upper primary (5-7)	6 (27.3%)	0 (0%)	3 (60%)	0 (0%)	5 (50%)
Junior secondary (8-9)	8 (36.4%)	0 (0%)	1 (20%)	1 (33.33%)	4 (40%)
Senior secondary (10-12)	8 (36.4%)	0 (0%)	1 (20%)	1 (33.33%)	1 (10%)
Tertiary	0 (0%)	5 (100%)	0 (0%)	0 (0%)	0 (0%)
Income					
Less than 100K	12 (54.6%)	0 (0%)	3 (60%)	0 (0%)	5 (50%)
K100-K250	6 (27.3%)	0 (0%)	0 (0%)	1 (33.3%)	0 (0%)
K251-K500	6 (27.3%)	0 (0%)	2 (40%)	0 (0%)	3 (30%)
K501-K1000	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Above K1000	0 (0%)	5(100%)	0 (0%)	2 (66.7%)	2 (20%)
Occupation					
Housewife	2 (9.1%)	0 (0%)	0 (0%)	0 (0%)	3 (30%)
Unemployed	2 (9.1%)	0 (0%)	0 (0%)	0 (0%)	1 (10%)
Farmer	17 (77.3%)	0 (0%)	5 (100%)	3 (100%)	6 (60%)
Self-employed	1 (4.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Formal employment	0 (0%)	5 (100%)	0 (0%)	0 (0%)	0 (0%)

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Selection of the SMAG members. Most respondents mentioned that SMAG members were community members who were chosen by the community in consultation with the headmen and the healthcare staff from local health centres. Participants explained that health staff would communicate to the headmen to select community members who would become SMAG members. In turn, headmen would call for a community meeting to choose SMAG members. In addition, respondents explained that in some instances, headmen assigned selected community members to carry out the task on their behalf. Further, respondents explained that during the meeting, the headmen would ask the community members to suggest names of people who would be appointed as SMAG members and to consider appointing people who lived in their communities and those that were already serving as community volunteers such as CHWs, NHC members, or TBAs. Respondents explained that SMAG members were then chosen through voting. In selecting and voting for the SMAG members, community members took into consideration whether the suggested people were respected, trusted and accepted by the community.

“The people themselves chose the person to represent them. The people from the community are the ones who see whether the person is willing to do that work and whether this person is suitable for the job” (65 years old headman)

Training of SMAGs. All SMAG members confirmed that they were trained at the beginning of the programme in 2012 by the DMO with support from ZISSP. They mentioned that the training took place only once, and that it focused on providing knowledge about safe motherhood and maternal health services.

“Yes we trained for five days, and then we sent them back to the community to go and practice and then we follow them up for mentorship...” (District MCH coordinator)

With regard to quality of the training, most SMAG members confirmed that the training was good and that it provided them with knowledge to identify danger signs during pregnancy and childbirth, and to help pregnant women in case of complications. However, some SMAG members complained that the training was too short and argued that they needed extra refresher training on how to manage labour complications.

“The training was very short. There is need for training, refresher training” (38 year old female SMAG member)

Awareness about SMAGs. Although most respondents were aware of the SMAG members and the work they did in their communities, some respondents (especially the young mothers and husbands) indicated that they had not met or heard about the SMAGs. Others mentioned that they had not met the SMAG members; they had only heard about them.

"I have heard about them but I don't know them....."(19 year old mother)

"I don't know them, I have not heard about them..." (27 year old mother)

Further, the respondents who mentioned that they knew the SMAG members were asked to explain who the SMAG members were. Most women and headmen explained that they had met the SMAG members at community meetings in their villages. Some women and husbands mentioned that they had only met the SMAG members who came to visit them at their homes. Other women mentioned that they only met the SMAG members when they went to the health centre when they went for antenatal care.

"SMAGs are members of that group who help women the time that they get pregnant until about 42 weeks after delivery to make sure that the mother and the baby are fine. They also visit the women, to see how they are doing while pregnant, and also see if they have any problem. If the woman has a problem they help to bring her to the facility, so that she can find help as soon as possible" (30 year old mother)

Attitude towards SMAG members and the programme. Most respondents, those who were not aware of the SMAG members not included, had a positive attitude towards the SMAG members and the work they do in the community. They explained that SMAG members helped them because they conducted meetings where they would teach women and husbands about danger signs in pregnancy and encouraged the women to deliver at the clinic. In contrast, some respondents explained that in the beginning of the SMAG program, some community members including church leaders and husbands had a negative attitude towards the SMAG programme by not accepting the programme because they did not understand its purpose. Other respondents mentioned that some husbands were especially suspicious of the male SMAG members and did not allow their wives to participate in the community meetings. However, after the SMAG members explained the purpose of the SMAG programme and started teaching in the community, the community members started to understand and support the group.

"The SMAGs are very good people, they are working well with the community and the government" (headman, 65 years old)

"At first it was hard especially with husbands because at first they thought [the male SMAG members] were having an affair with their wives but later on they started seeing the interest of their wives in the group and what they advise them to do" (40 year old male SMAG member)

Theme 2: The roles of the SMAG members

Respondents mentioned that their main roles included organising community meetings to which they invited both pregnant women and those who were not pregnant to teach them about danger signs in pregnancy and childbirth and about the importance of attending

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ANC early in pregnancy. In addition, they invited husbands to these meetings in order to educate them on HIV, family planning and on how to support their wives during pregnancy. In these meetings they also persuaded the husbands to accompany their wives to the health centre for ANC visits. Other roles included encouraging women to give birth at the clinic and to return for postnatal care at the clinic. Moreover, SMAG members encouraged families to prepare for childbirth by saving money for the requirements for the mother and baby during labour and delivery at the clinic.

"We organise community meetings where we teach health education to the pregnant mothers about the danger signs in pregnancy like headache or bleeding. We also teach them about the importance of attending ANC visits with their husbands, and giving birth at the clinic" (39 year old female SMAG member)

Respondents mentioned that the SMAG members move around the villages to monitor pregnant women and identify those who may have danger signs and need help. They encourage the women who live far from the clinic to go and wait for delivery at the mothers' shelter at the clinic. In case of complications, respondents mentioned that SMAG members mobilise emergency transport and escort pregnant women to the health centre.

"SMAGs also visit the pregnant women in their homes to know if there is a problem and encourage those who are almost giving birth to go and wait from the mothers' shelter at the clinic" (48 year old headman)

Moreover, respondents mentioned that if the nurse was not available at the healthcare centre, SMAG members, specifically the former TBAs, would be called to go and assist pregnant women to deliver at the healthcare centre.

"At times maybe the nurse is not around, we are called from home and come here to work. And even at night we do come here if there is a patient and she wants to deliver, we help that woman to deliver. A part from that I even do the ANC checkups and help the nurse with under five child health care, weighing the children (53 year old SMAG member)

Further, respondents mentioned that SMAG members hold meetings with stakeholders such as headmen, church leaders, and healthcare staff regarding the safe motherhood activities in their communities. They also write monthly reports about their activities in the community and send them to the healthcare centre and district medical office.

"They send monthly reports to the health centres on the meetings they held.....they have two registers, one is to track the pregnant women, the other one is to track the postnatal care visits so if there is any home delivery they find out and they report

that home delivery to the health centre at the end of the month” (39 year old nurse/midwife)

Theme 3: Achievements of the SMAG Programme

The third theme focused on the respondents’ perceived achievements of the SMAG programme. Most respondents believed that the SMAG programme had improved safe motherhood activities in the communities. For example, respondents mentioned that the SMAG programme had led to an increase in community knowledge about danger signs and complications during pregnancy such as bleeding, high blood pressure, headache and fits. The programme also led to an increase in the importance of knowing and keeping in mind medical conditions during pregnancy such as nutrition, anaemia, and HIV during pregnancy. Further, the respondents, specifically the nurse/midwives and the SMAG members, believed that the programme had led to an improvement in women’s attitude towards ANC use because they noticed that most women had started going early for ANC visits at the health centre. Moreover, respondents (especially the nurses/midwives, headmen and the SMAG members) explained that they had seen an increase in the number of husbands who accompanied their wives for ANC visits, HIV counselling and testing during ANC. They explained that those who were found to be HIV positive during ANC testing were put on treatment to prevent the mother to child transmission of HIV during pregnancy.

“Yes, the numbers have really increased, especially on the fist ANC bookings. Before the SMAGs, women used to start going for the ANC bookings when the pregnancy was 6 months. But this time they come as early as 8 weeks” (MCH coordinator)

Further, most respondents, specifically the nurse/midwives, the SMAG members and the headmen, mentioned that they had observed an increase in the number of women that gave birth at the health facility and those who returned for PNC at the health facility. Moreover, respondents (especially SMAG members and the headmen) mentioned that they saw that many families started setting aside money for transport to the clinic and for buying requirements for the mother and baby during labour and childbirth (i.e. mother and baby clothes, soap and cleaning materials). The respondents noted that a lack of preparation and money used to be important barriers to facility delivery before the introduction of the SMAG programme. Further, respondents mentioned that many pregnant women who lived far from the clinic started leaving home early to go and stay in the mothers’ shelter and wait for labour and childbirth from there.

“Yes, we have seen a lot of facility-based deliveries..... many mothers now deliver from the clinic. The SMAGs have really achieved what they were founded for” (MCH coordinator)

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However, respondents, especially the mothers, husbands, headmen and SMAG members, mentioned that, although many women had started going to the clinic for delivery, many families found it difficult to find money to buy food to use when the woman stayed in the mothers' shelter. Others failed to save money to buy baby clothes that were needed during delivery at the health centre. As a result, some SMAG members complained that some pregnant women opted to stay at home despite the presence of complications. These women would only call for help at a late stage, usually during the night. SMAG members complained that often it would be difficult then to get these women to the health centre due to the long distances and transport problems.

"We have been having a problem with some women who deliver from home... like last month we had about four who delivered from home. Yes and the reason is that they wait at home. They only call us when they notice problems" (30 year old male SMAG member)

Moreover, some SMAG members and headmen mentioned that some socio-cultural norms and practices were still a challenge in some communities, and hindered many women from accessing health care from the clinics. Among these are trust in traditional medicines, home delivery and the use of TBAs, as well as the belief that women should not receive care from a male health worker. However, some respondents (especially the SMAG members and headmen) explained that the inclusion of TBAs in the SMAG programme helped to motivate most women to increase their confidence in the health services provided at the clinic. They added that SMAG members motivated most women to put less trust in TBAs and home delivery. Rather, they motivated them to increase their trust in the nurses/midwives and to seek care from the health care facilities.

"Most TBAs are no longer conducting deliveries at home. They are within the SMAGs, and are assisting bringing clients who have complications" (34 year old nurse/midwife)

Respondents had mixed feelings concerning the quality of services and care that women received at the health centre since the introduction of the SMAG programme. Most respondents, especially the MCH coordinator, nurses/midwives, and some SMAG members, indicated that the SMAG programme had resulted in a reduction in the waiting time at the health centre since SMAG members would mobilise transport and escort many pregnant women with complications to the health centres. They explained that this made it easier for the pregnant women with complications to receive emergency care [at the health centre] more quickly than before. Further, respondents mentioned that the programme led to a reduction in the number of deaths for pregnant women and newborn babies. They observed that pregnant women and newborn babies still died [as a result of pregnancy and childbirth-related complications] in the communities where there were no SMAG members.

“Yes there is a difference because before the SMAGs came women used to deliver from home, there used to be maybe a mother who dies, a baby who dies. But from the time the SMAGs came they started delivering from the clinic, there are no cases of women or baby dying now” (40 year old headman)

In contrast, with these positive views, most respondents, especially the nurse/midwives, complained that the increased number of pregnant women seeking health care at the health centres had resulted in a greater workload for the few available healthcare staff. In addition, the headmen confirmed that most health centres in their communities had few healthcare staff. Further, the headmen, mothers and husbands complained that most health centres had no mothers’ shelters, and that in those cases that they did exist, they were in a deplorable state. Further, most health centres only had small maternity rooms which were not adequately equipped to handle emergency maternity cases.

“There are a lot of deliveries now. It’s like the SMAGs are encouraging mothers to deliver from the facility. But now the problem is again increasing the number of the Staff. You find that you are alone” (31 year old nurse/ midwife)

Theme 4: Challenges for SMAG members

Regarding their work, most SMAG members had mixed feelings. Most SMAG members explained that they were happy with their work because they helped save women’s lives. However, the fact that the SMAG work was voluntary was a reason for SMAG members to be unhappy, because it made it difficult for them to do other work (for example in the field) and therefore they often had no income. Moreover, they reported that some community members even told them they would be wasting their time working voluntarily.

“The work is good, although it is a voluntary work. But it is good because we are helping the people in order to save their lives and gain more knowledge in the community” (40 year old male SMAG member)

Further, some SMAG members and the nurses/midwives complained that the lack of incentives demotivated most SMAG members to continue their activities. Nurses/midwives explained that sometimes they helped the SMAG members and provided small incentives when they went to hand in their reports, but that it was difficult to sustain the incentive without support from the DMO.

“The difficulty they find is that they are volunteers. But at home, they just leave their homes without anything. They don’t even receive anything in the end of the months... anything for the family” (40 year old headman)

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Further, respondents complained that the lack of financial and material support from the community members and the DMO made their work extremely difficult. They mentioned that SMAG members did not have any means of finding transport to either reach pregnant women in the community or to take the women with complications to the health centre. Moreover, they complained that it was difficult to mobilise transport in the community, and reaching women who developed complications at home posed serious challenges due to the long distances to the health centres and the inaccessible roads during the rainy season. Moreover, some families (in particular, the single mothers) often failed to find money to pay for emergency transportation to the health centre. As a consequence, SMAG members themselves had to use their personal money with support from some community members to help the family pay for the transport. They mentioned that working as volunteers became difficult for them, especially when they had costs resulting from their work, and which they had to cover from their personal budgets. They mentioned that at the beginning of the program, SMAGs were given bicycles, which were shared among several SMAG members, but which also meant that some SMAG members did not receive anything and ended up walking long distances.

“The problem which they find is that they don’t have transport and where they work its very far. Sometimes it is night and they have no bicycle to use. So it is night they are just walking in the dark. But the work is ok” (38 year old male SMAG member)

Further, respondents (especially the nurses and MCH coordinator) indicated that the number of SMAG members who were trained by the program was not enough to reach the whole population in their respective catchment area. They indicated that some catchment areas were vast, comprising 38 villages and that only 20 SMAG members would be active there. Respondents added that sometimes it was difficult for the community members to reach the SMAG members on phone because of the poor mobile phone network or dead batteries due to lack of electricity in most areas. In addition, SMAG members had to pay for these calls because they did not receive any support from the DMO or from the local health centres.

“The SMAG members are few....because they are 20 and we have 38 villages and one village is very big. So you find that it’s not easy for one SMAG member to look after so many villages, so we leave them three or two” (38 year old nurse/midwife)

Moreover, the lack of refresher training also demotivated most SMAGs. They confirmed that they only received training once at the beginning of the programme. They mentioned that they needed training and learning materials (such as books, papers and pencils) in order to increase their knowledge.

Discussion

This study aimed to investigate the role of the SMAG programme, specifically with regard to its role in increasing the utilization of maternal health care services and improvement in maternal and newborn health outcomes in Kalomo, Zambia. Overall, our findings show that community members were aware of the SMAG programme, knew who its members were, and had a positive attitude towards it. Moreover, our findings suggest that the SMAG programme led to an increase in awareness about danger signs in pregnancy, and an improvement in community attitudes towards maternal health services. Further, respondents noted an increase in ANC, facility-based delivery, and PNC as a result of the SMAGs. Moreover, the respondents felt that the programme resulted in an improvement in maternal and newborn health outcomes.

However, various challenges affected implementation of the SMAG programme, such as lack of material and financial support to the programme, a lack of refresher training for SMAG members, and poor quality of care in health care facilities. Specifically, the respondents mentioned a lack of adequate MWHs, low health facility staffing levels, and the poor condition and small size of labour wards that were inadequately equipped to handle emergencies.

These findings are consistent with previous studies in Zambia (Sialubanje *et al.*, 2015a, 2015b, 2016; Ensor *et al.*, 2014; Green *et al.*, 2014; Rosato *et al.*, 2008) which highlighted the importance of community-based interventions in improving women's utilization of maternal healthcare services. They highlight the importance of engaging the community at every stage of the intervention development process to ensure programme success (Bartholomew Eldredge *et al.*, 2016). For example, our current findings show that SMAG programme implementers involved community members to select the people who would become SMAG members. This ensured that SMAG members were chosen from the existing TBAs and community-based health workers who were respected and trusted by community members. This finding is consistent with the results of our previous study (Sialubanje *et al.*, 2015b) and research from other countries (Titaley *et al.*, 2010), which showed that many pregnant women preferred using the services provided by community-based agents in whom they had trust and confidence because they were familiar with them and lived with them. Moreover, these findings confirm that there are benefits to be gained from health worker retention schemes which empower local communities to identify, train, recruit and retain local healthcare staff such as nurses and midwives and encourage them to work in their local communities (Sialubanje *et al.*, 2015b; Titaley *et al.*, 2010).

Second, these findings highlight the importance of the SMAG programme in increasing women's awareness about danger signs in pregnancy and improving their attitude towards facility-based maternal health care services such as ANC, delivery and PNC. The respondents also mentioned that women who had a positive attitude towards facility-based health care ended up using the services. This finding is consistent with our previous studies (Sialubanje *et al.*, 2014a, 2014b, 2015b) which showed the importance of women's attitude

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towards facility-based health care services, as well as their past experience in influencing their intention to seek health care services. Moreover, the current study highlights the importance of socio-cultural norms in influencing health care seeking behavior among pregnant women (Sialubanje *et al.*, 2014a, 2014b, 2015b, Titaley *et al.*, 2010). For example, it was mentioned that the male SMAG members faced initial resistance from the husbands, because they did not trust them with their wives. This finding highlights the need for public health interventions to consider the local cultural context when designing health promotion programmes.

Next, our findings highlight the importance of involving husbands in the identification and solution of health-related problems to enhance their wives' service utilization. The current findings suggest that community sensitisation and door to door campaigns by the SMAG programme motivated many families to start preparing for childbirth in advance, by saving resources to meet the transportation costs and to buy the requirements for the mother and baby. Moreover, the current findings show that husbands started accompanying their wives to the health centre for ANC and HIV counselling and testing. Moreover, husbands started allowing their wives to leave home to go and stay in the MWH and wait for labour. This finding is consistent with our previous studies (Sialubanje *et al.*, 2014a, 2015a, 2015b, 2016) which reported the importance of family support, especially from the husband, in influencing pregnant women's health seeking behavior.

Further, our findings highlight the importance of facility-based skilled care in improving maternal and newborn health outcomes (WHO, 1996, 2005, 2015). For example, the respondents felt that the SMAG members were doing a good job since the SMAG programme had resulted in a reduction in the number of women and new born babies who died from pregnancy and labour related complications. They also believed that the programme had led to an improvement in maternal and newborn health outcomes in their district. This finding is important because it is consistent with our previous studies (Sialubanje *et al.*, 2014a, 2015a), and it aligns with WHO reports (WHO, 1996, 2005, 2015) which showed that increasing supervised and facility-based deliveries in rural areas could improve maternal and newborn health outcomes in developing countries with a high maternal mortality ratio. Moreover, this finding is important because it provides a basis for public health interventions to promote access to and utilization of facility-based health care services. However, since our findings are based on a qualitative study, there is a need to validate these findings using quantitative methods that will test whether communities with SMAGs perform better on use of MWHs than those without SMAGs.

Although most respondents were positive about the SMAG programme and its achievements, the respondents also mentioned various management and logistical problems which affected the SMAG programme implementation. For example, although respondents indicated that they would have liked to receive refresher training for SMAG members, training was only offered at the start of the programme. Moreover, although the SMAG programme stressed community mobilisation and motivating women to start going to the health centre for ANC, delivery, and PNC, the programme did not provide financial

resources for emergency transport for women who developed complications or resources to buy the requirements for the baby (Wang *et al.*, 2016). In addition, the programme did not focus on improving health system-related factors, such as constructing new MWHs, and improving the quality of services in existing MWHs, expanding the size of labour wards and equipping them to be able to better handle complications, or increasing the number of nursing staff. All these factors affected service provision and the quality of care that pregnant women received at the health care facilities.

Indeed, our findings indicate that, due to poor staffing levels in health facilities, SMAG members, specifically the former TBAs, were often called upon to assist women during delivery at the healthcare centre. This finding is consistent with previous studies in Zambia which reported low rates of skilled birth attendants among women who delivered in health facilities (Sialubanje *et al.*, 2014a, 2014b, 2015a, 2015b, 2016; Stekelenburg *et al.*, 2004; Biemba *et al.*, 2014) and clearly shows the need for public health interventions to focus, not only on mitigating demand side factors, but also on supply side factors such as improving the quality of the MWHs and labour wards, increasing staffing levels and ensuring availability of medical equipment for emergency obstetric care in order to encourage women to use facility based healthcare (WHO, 1996, 2005, 2015; Sialubanje *et al.*, 2014a, 2015a, 2015b, 2016; Wang *et al.*, 2016; Biemba *et al.*, 2014).

Some potential limitations to the present study should be noted. First, the findings focus solely on the experience of respondents recruited from the health centres where SMAGs were active and respondents consisted of those who accepted to participate in the study. Therefore, the experiences of community members from areas without SMAG members were not explored, which limits the generalisability of the findings. Moreover, some statements made by our respondents, for example on the decline in maternal and newborn mortality, cannot be verified without obtaining quantitative data from healthcare facilities.

Conclusion

Nevertheless, the current findings suggest that respondents had a positive attitude towards the SMAG program and that our findings might provide a basis for the design of community-centered interventions focusing on increasing pregnant women's demand for and utilization of facility-based skilled maternal healthcare services in rural Zambia. Specifically, our findings suggest that the SMAG program might lead to an increase in pregnant women's awareness and personal risk perception about pregnancy and labor-related complications, and motivate them to go early for ANC and PNC visits at the clinic. Further, the current findings suggest that the SMAG program might be an important intervention to motivate husbands to get involved in maternal healthcare services and support their wives to go and stay at the MWHs to wait for labor at the clinic. Moreover, these findings suggest that for the SMAG program to be effective, public health programs should focus on addressing contextual barriers – such as providing adequate training, equipment and incentives to the SMAG members, ensuring availability of community emergency transport, and establishing and equipping maternity waiting homes and labour wards to accommodate the pregnant

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women who go to deliver there. Finally, these findings suggest a need to increase staffing levels for midwives in health facilities in order to mitigate the increased workload and improve the quality of care provided to the pregnant women.

Chapter 9

General Discussion

General discussion

The aim of the research presented in this dissertation was to explore the psychosocial and environmental factors that affect utilization of maternal healthcare services in Kalomo, Zambia. The knowledge about these factors will be used to inform the design of future public health interventions focusing on promoting utilization of maternal healthcare services and ultimately, improving maternal and newborn health outcomes in Zambia. Maternal health has become an important global public health issue over the past few years, and improving the health of women during pregnancy, childbirth and the post-partum period is one of the main priorities for the world health organization (WHO) and many developing countries (WHO, 2005, 2007, 2014a). To this end, we conducted several empirical studies to explore the factors that affect utilization of maternal healthcare services in Kalomo, Zambia. The findings of these studies are presented in the previous chapters (chapter 2 to 8). The current chapter, therefore, provides a general discussion of the findings presented in this dissertation, and discusses them in light of the existing literature, highlights the methods used to conduct the current research, as well as the strengths and limitations of the research. Moreover, we will discuss the implications of the research findings and provide recommendations for future research, and the development of new intervention programmes.

Summary of the main findings

The qualitative study presented in **Chapter 2** aimed to identify psychosocial and environmental factors contributing to low utilization of maternal healthcare services in Kalomo, Zambia. The findings of this study showed that most women had insight into maternal health complications. Nevertheless, they started antenatal care visits late and did not complete the recommended schedule. Moreover, most women gave birth at home and did not use postnatal care. These findings show that most women are aware of pregnancy and labour complications, and that lack of knowledge is not the reason for the low utilization of maternal healthcare services in rural Zambia. Rather, these findings suggest that several personal and environmental factors including women's negative attitude towards the perceived quality of maternal healthcare services in clinics, negative opinion of important referents, physical and economic barriers such as long distances, high transport and indirect costs such as money for baby clothes and other requirements, were the main reasons for the low utilization of maternal healthcare services. These findings replicate previous studies in Zambia and other countries which reported that several factors such as long distance, poor quality of services, and economic costs (Thaddeus & Maine, 1994; Choulagai et al, 2013; Chakraborty *et al.*, 2003; Gabrysch *et al.*, 2009; 2011; Stekelenburg *et al.*, 2004; Speizer *et al.*, 2014) affect use of maternal healthcare services. These findings suggest that there is need for integrated interventions to mitigate these barriers and improve utilization of maternal healthcare services. Our findings also suggest a need for further research to measure the underlying beliefs such as attitude, subjective norms and PBC, and determine

their relevance and changeability. Attitude, subjective norms and perceived behavioral control (PBC) are informed by beliefs, and it is important to know these beliefs, in particular, those that are important and can be changed, because through these beliefs interventions can be developed and evaluated.

The quantitative study reported in **Chapter 3** aimed to identify important personal and environmental factors influencing women's intention to use maternal healthcare services in Kalomo, Zambia. Overall, the findings of this study showed that most respondents had high intention to use healthcare services, and intention was positively associated with attitude, personal norms, behavioral control, education and income levels. Conversely, intention was negatively related to perceived social norms, age and distance. Multivariate regression analysis showed that, together, these variables accounted for 41.8% of the variance in intention, with perceived behavioral control being the strongest unique predictor of intention, followed by geographical distance and perceived social norms. These findings confirmed the qualitative findings reported in chapter 2 and highlight targets for public health programmes that focus on motivating pregnant women to use maternal healthcare services by influencing women's normative and control beliefs regarding maternal healthcare services, and mitigating the physical barriers, such as the long distances to the healthcare facilities.

Chapter 4 reports the findings of a qualitative study that aimed to explore the reasons that motivate women to give birth at home and to seek the help of traditional birth attendants (TBAs). These findings showed that most women had a positive attitude towards TBAs and perceived them to be respectful, skilled, friendly, trustworthy, and available when they needed them. Moreover, personal susceptibility to pregnancy and labour complications, social and cultural norms regarding childbirth, negative attitude towards the quality of services provided at the clinic, and low risk perception about potential complications influenced the decision of most women to deliver at home and use the services provided by the TBAs. In addition, various physical and socioeconomic barriers including long distances, women's lack of decision-making autonomy regarding child birth, dependence on the husband and other family members for the final decision about the delivery location, lack of money for transport and the requirement to bring baby clothes and food while staying at the clinic, make most women give birth at home and use TBAs. These findings replicate previous studies in Zambia and other countries (Stekelenburg *et al.*, 2005; Hazemba and Siziya, 2008; Titaly *et al.*, 2010; Gill *et al.*, 2011; Miller *et al.*, 2012; Biemba *et al.*, 2014) which reported that TBAs play an important role in the provision of maternal healthcare services in rural areas. These findings highlight intervention targets for improving utilization of maternal healthcare services and suggest that improving the quality of existing facility-based delivery services, and use of nurse/midwives who are respectful, trustworthy and familiar to the women, could motivate many women to use facility-based delivery services. Moreover, these findings suggest a need to strengthen linkages between TBAs and the formal health system.

Chapter 5 presents findings of a qualitative study that was conducted to explore women's experiences and beliefs concerning the utilization of maternity waiting homes (MWHs) in rural Zambia. The WHO (1996) has recommended establishment and use of MWHs in order to mitigate long distances and improve access to facility-based delivery services. Overall, the findings of this study showed that most women appreciated the important role MWHs play in improving access to skilled birth attendance and improving maternal health outcomes. However several factors such as women's lack of decision-making autonomy, prevalent gender inequalities, low socioeconomic status and socio-cultural norms prevent them from utilising these services. Moreover, mothers reported that they did not use the MWHs due to factors such as a lack of funds to buy the requirements for the baby and mother to use during labour at the clinic, concerns about a relative to remain at home and take care of the children and husband, and concerns about the poor state and lack of basic social and healthcare needs in the MWHs – such as adequate sleeping space, beddings, water and sanitary services, food and cooking facilities as well as failure by nurses and midwives to visit the mothers staying in the MWHs to ensure their safety. These findings highlight important targets for interventions and suggest a need to provide women with skills and resources to ensure decision-making autonomy and address the prevalent gender and cultural norms that debase their social status. Moreover, the findings suggest a need to consider provision of basic social and healthcare needs at the MWHs, such as adequate sleeping space, beddings, water and sanitary services, food and cooking facilities. Moreover, it is important to ensure that nurses and midwives conduct regular visits to the mothers staying in the mothers' shelter and can be called upon when needed.

Building on the findings of the study reported in chapter 5 which showed that husbands could play an important role in supporting their families and assisting their wives in seeking healthcare services, **Chapter 6** reports the results of an additional qualitative study which explored men's experiences and perceptions regarding their wives' use of MWHs in Kalomo district, Zambia. Overall, these findings showed that husbands perceived many potential benefits of MWHs, including improved access to facility-based skilled delivery services and treatment in case of labor complications. Their many roles during the healthcare-seeking process included decision making and securing funds for transport, food, cleaning materials, and clothes for the mother and the neonate to use during and after labor. However, limited financial resources made it difficult for them to provide for their wives and newborns, and usually led to husbands' delay in making decisions about MWH use. Poor conditions in MWHs and the lack of basic social and healthcare needs meant some husbands had forbidden their wives from using the facilities. These findings replicate the findings reported in Chapter 6 and highlight the important role husbands play in supporting – or preventing – their wives to use MWHs.

The findings reported in **Chapter 7** are based on a quantitative study that investigated whether the presence of a MWH affected the various personal and environmental factors that were identified in previous chapters (chapters 5 and 6), and which ultimately affect the use of MWHs in Kalomo, Zambia. The study also reports on the differences in the association

between the respondents who have access to a health centre with a MWH and those who do not. These findings showed that, compared to the respondents from health centres without MWHs, those from centres with MWHs were more likely to express a willingness to use MWHs, to perceive benefits from using a MWH, to perceive staying in a MWH as enjoyable, to perceive more social pressure from the important others to use MWH, to perceive personal risk from pregnancy and childbirth related complications, to go and stay at the clinic before delivery, to give birth at a health facility, and to receive care from a skilled birth attendant. In contrast, these respondents were less likely to believe that important others used MWHs, and were less likely to perceive barriers regarding the use of a MWH. There was no significant association between the presence of a MWH and perceived behavioural control, development of complications after childbirth, or use of antenatal and postnatal care. These results highlight important differences in the factors that affect use of MWHs between the respondents with access to a MWH and those who do not have access, and can serve as a basis for the design of public health interventions focusing on improving access to MWHs and facility-based skilled birth attendance.

Finally, **Chapter 8** reports the findings of a qualitative study which explored the role of the Safe Motherhood Action Group (SMAG) program to motivate pregnant women to use maternal healthcare services provided in healthcare facilities. SMAGs have the aim of increasing utilization of skilled and facility-based maternal healthcare services, and they are active in many districts in rural Zambia (Ben *et al.*, 2016; Ensor *et al.*, 2014). Previous research (Chisenga *et al.*, 2014; Ensor *et al.*, 2014; Rosato *et al.*, 2008) has suggested that community-centred health interventions such as a SMAG program have potential to lead to desired health behavioural change and favourable health outcomes. Overall, our findings showed that respondents were aware of the presence, selection, training, and roles of the SMAG members and had a positive attitude towards the programme. They believed that the SMAG programme led to an increase in women's risk perception about pregnancy and childbirth-related complications. Further, participants believed that the programme led to an increase in the women's utilization of facility-based antenatal, delivery, and postnatal care, and resulted in improvement in maternal and newborn health outcomes. However, various challenges affected successful implementation of the SMAG programme. Among these were lack of material and financial support to the programme, lack of refresher training for SMAG members, poor quality of care in health care facilities due to a lack of MWHs, low staffing levels in health facilities, the poor state and small size of the labour wards, and lack of equipment to handle obstetric emergencies. Although various barriers affected its optimal implementation, our findings suggest that a SMAG programme might be an important community intervention for increasing utilization of facility-based skilled care and improving maternal and newborn health outcomes.

Study implications

The findings of this research have provided an understanding into the important factors which affect utilization of maternal healthcare services in rural Zambia. They show that

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most women are aware of the risk of pregnancy and labour-related complications, and the benefits of using facility-based maternal healthcare services. Thus, these findings clearly show that lack of knowledge about pregnancy and labour complications is not the reason for the low utilization of maternal healthcare services in rural Zambia. This finding contradicts an earlier study in Zambia (Banda *et al.*, 2012) which reported that lack of knowledge about pregnancy and labour complications was the reason for the low use of maternal healthcare services.

Our findings also show that, despite having a positive attitude towards maternal health services and expressing high behavioral intention to use the services, most women do in fact not use the services. Thus, these findings confirm an intention-behaviour gap which has been reported in previous studies (Milne *et al.* 2006; Fishbein & Ajzen, 2010; Conner & Norman, 2005; Sheeran & Oebell, 2000; Stekelenburg *et al.*, 2004; Chakraborty *et al.*, 2003; Sheeran *et al.*, 2005). Indeed, the findings presented in this dissertation (Chapter 3) show that perceived behavioral control (or self-efficacy) played an important role in predicting women's health seeking behavior, which suggests that most women perceived several internal and external barriers – including physical and economic barriers such as long distances, high transport and indirect costs including money for baby clothes and other requirements – which made them likely to perceive less control over the intended behaviour. The importance of both distance and transportation costs to the healthcare facilities in limiting access to facility-based skilled birth attendance have been reported in previous research from Zambia and other countries (Thaddeus and Maine, 1994; Gabrysch *et al.*, 2009; 2011; Stekelenburg *et al.*, 2005; Choulagai *et al.*, 2013; Ganaba *et al.*, 2016).

Moreover, these findings clearly show the importance of (a lack of) financial resources – such as those needed to procure food when staying at the clinic and requirements for the mother and her baby to use during labour – in influencing women's timely decision to seek healthcare. For example, the lack of resources to buy baby clothes and cleaning materials needed during labour was found to be an important factor preventing many women from giving birth at a healthcare facility (Chapters 2, 3, and 4). Again, these findings replicate previous studies conducted in Zambia (Stekelenburg *et al.*, 2004; 2005; Phiri *et al.*, 2014) and other developing countries (Thaddeus and Maine, 1994; Speizer *et al.*, 2014; Chakraborty *et al.*, 2003) which also reported that women's delay in decision-making to go to the clinic put some women at risk of giving birth at home and developing complications. To help women act on their behavioral intentions, it is important to mitigate these internal and external barriers (Fishbein and Ajzen, 2010; Sheeran and Oebell, 2000; Chakraborty *et al.*, 2003; Titaley *et al.*, 2010; Moyer and Mustafa, 2013).

To mitigate long distances to the health centres, our findings suggest a need for the establishment of MWHs where women can stay and wait for their labour, and which are situated close to the health centre where they can receive skilled birth attendance. Optimal use of MWHs has been shown to increase utilization of facility-based delivery services and improve maternal and newborn health outcomes (WHO, 1996; Van Lonkhuijzen *et al.*, 2012; WHO, 2015). Indeed, our findings show that both women and their husbands have a

positive attitude towards MWHs. However, since our findings also show that these services are not often used by most women due to their poor conditions, interventions should focus – not only on establishing MWHs, but also – on improving the social services and living conditions in the existing MWHs, by providing beddings, bathing and cooking facilities, and ensuring privacy.

Moreover, our findings suggest that interventions in rural Zambia should focus on mitigating economic barriers, possibly by providing material or non-financial resources to the pregnant women to enable them to procure the requirements for use during delivery at the clinic. This finding is consistent with a recent study conducted in Zambia (Wang *et al.*, 2016), which showed that provision of non-financial incentives to pregnant women – in the form of a baby and mother pack comprising baby clothes, a bottle of petroleum jelly (vaseline), soap, cleaning materials and a wrapper (*chitenge*) – could improve facility-based delivery. Moreover, our findings regarding the physical and economic barriers, such as the long distances to the health centres and high transport costs, suggest that supporting women to meet transport costs could improve utilization of maternal healthcare services. This finding is consistent with studies from other countries. For example, Ganaba *et al.* (2016), reported a significant increase in facility-based delivery rates among rural women in Burkina Faso after the launch of a national subsidy policy which reduced user fees for maternity services by partial exemption of direct health care costs for emergency obstetric care, including transport costs in case of referrals. Despite this positive finding, these authors indicate that the absence of baseline quality of care data made it difficult to assess the impact of the policy on quality of care. Thus, I argue that there is a need to evaluate such interventions to determine their impact and cost-effectiveness before considering adopting them as national strategies.

Furthermore, the findings of Chapter 2, 3 and 4 highlight the importance of women's attitude towards maternal healthcare services and the perceived quality of services in determining women's decisions regarding the place of delivery. The findings suggest that women base their choices on their past experiences, and that women who perceived good quality in the maternal healthcare services provided to them during the previous pregnancies were more likely to use the services during their future pregnancies. These findings replicate previous research findings, for example, those reported by Lubbock and Stephenson (2008) and Stekelenburg *et al.* (2004).

Socio-cultural norms and family support seem to be important factors affecting women's use of maternal healthcare services. For example, the findings reported in both the second and third chapters of this dissertation show that the presence of a male birth attendant during delivery at a health facility may be an important factor preventing many women from giving birth at healthcare facilities. This seems to be based on the belief that only one's husband should see the wife's nakedness. This finding might have important implications for maternal healthcare service interventions encouraging training and recruitment of male midwives in Zambia.

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Interestingly, our findings suggest that husbands hold a dominant position in the family and that they play an important role in influencing their wives' use of maternal healthcare services. However, our findings also show that many women lack decision-making capacity and depend on their husbands for decision-making and financial support. Moreover, some husbands have a negative attitude towards maternal healthcare services and most perceive external pressure to find financial resources to support their wives, which leads to delay in their wives' seeking maternal healthcare services. These findings replicate previous studies (Titaley *et al.*, 2010; Hazemba *et al.*, 2008; Adewemimo *et al.*, 2014; Mpembeni *et al.*, 2007; Speizer *et al.*, 2014; Ohashi *et al.*, 2014; Banda *et al.*, 2016; Gabrysch *et al.*, 2016), which showed that women's lack of the decision-making capacity and dependence on their husbands for decision-making and financial support could be one of the main reasons for the delay in seeking maternal healthcare services in rural areas.

Furthermore, the findings of this dissertation reported in chapter 2, 3, 6 and 7 also suggest that support from important family members such as the husband, parents, and friends play an important role in motivating pregnant women to use maternal healthcare services. This finding replicates those reported by Ohashi *et al.* (2014) which highlighted the role of family support in influencing health seeking behaviour. Moreover, the mere belief in or observation of important others such as friends, seems to be an important factor influencing women's health seeking behaviour. These findings suggest that, rather than being negative and accept the social norms, there is a need for initiatives to change them. Thus, these findings suggest that health planners need to take into consideration the local cultural context and understand how to change them using theory and evidence-based methods such as modelling and vicarious reinforcement, and building skills for resistance to social pressure, and shifting focus (Bartholomew *et al.*, 2011).

Furthermore, the current findings suggest that establishment and implementation of community-centred interventions such as the SMAGs could lead to an increase in women's risk perception about pregnancy and childbirth-related complications, and motivate them to use facility-based maternal healthcare services (Ensor *et al.*, 2014; Ben *et al.*, 2014; Rosato *et al.*, 2008; Green *et al.*, 2014; Chisenga *et al.*, 2016). Moreover, our findings suggest that the SMAG programme could mitigate the various socio-cultural norms highlighted in this dissertation, by encouraging husbands to get involved in maternal healthcare services and empowering pregnant women with skills to use their decision-making capacity. Such a programme might also increase community participation in maternal health programmes and motivate husbands to support their wives to use facility-based antenatal, delivery and postnatal care. Moreover, our findings suggest that community-centered interventions could strengthen the relationships and trust between the formal health system and the various stakeholders such as the TBAs, headmen and neighbourhood health committee (NHC) members. However, although our findings suggest that the SMAG programme can lead to an increase in the use of maternal healthcare services, there is a need to evaluate its impact and cost-effectiveness.

Finally, our findings suggest that although a programme to improve the quality of basic and comprehensive obstetric care (EmONC) in healthcare facilities in rural Zambia does exist, it might not be effective to mitigate the health system challenges that affect the quality of care for maternal healthcare services in rural areas. For example, the existing interventions consist of construction and equipping of maternity blocks, operating rooms, laboratories, staff houses and installation of solar panels, standby generators, and water supply systems. Although, these are valuable and needed, the current findings show that most health facilities still face other challenges such as low staffing levels for nurses and midwives, a lack of labour wards, and where they are present, they are small in size, and lack equipment to handle obstetric complications. This suggests that the current interventions may not be adequately implemented in rural areas, or they are not effective. Thus, there is a need to evaluate the extent to which these on-going interventions are implemented in rural areas and to determine their cost-effectiveness in order to mitigate the various health-system barriers and improve the quality of care that women receive when they go to the health centre for ANC, delivery and postnatal care.

For the systematic development of theory- and evidence-based interventions, which make use of the findings reported in this dissertation, a framework, *Intervention Mapping* (Bartholomew Eldredge *et al.*, 2016) has been developed which provides a detailed description of the development process and the content of an intervention. Briefly, Intervention Mapping comprises six different steps: Needs Assessment, Preparing Matrices of Change Objectives, Selecting Theory-Informed Intervention Methods and Practical Applications, Producing Programme Components and Materials, Planning Programme Adoption, Implementation, and Sustainability, and Planning for Evaluation.

Thus, completing the six steps of Intervention Mapping will provide a detailed description of the health problem and its determinants that are translated into specific objectives at the behavioural and determinant level, provide information on the methods and practical applications to be used, and details on the production, implementation, adoption and evaluation of the evidence- and theory-based intervention. The current research focused on the needs assessment, that is, a systematic study of the health problem and its behavioural and environmental determinants (Bartholomew Eldredge *et al.*, 2016). Since the current findings provided enough insight into the determinants of the maternal healthcare service utilization, the next steps of the Intervention Mapping framework should be followed in the development of future interventions.

Implications for future research

Since the current research focused mainly on identifying barriers to service use, there is a need for both qualitative and quantitative studies that will focus on those women who are using the services and to identify the determinants of service utilization among this group which could provide additional starting points for intervention development. Moreover, there is need for a study that will explore the perceptions of healthcare providers, such

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as nurses and midwives, regarding the quality of maternal healthcare services in various health facilities in rural Zambia.

Furthermore, since our qualitative findings suggested that the SMAG programme might increase utilization of facility-based maternal healthcare services, there is need to validate these findings using quantitative methods. For example, it may be investigated whether communities with SMAGs perform better on the use of facility-based maternal healthcare services than those without SMAGs. In addition, although the findings from in-depth interviews with women and husbands as well as the cross-sectional study showed that MWHs might improve utilization of maternity waiting and lead to a reduction in adverse maternal and newborn health outcomes, these studies may not have the power to detect their effectiveness. To draw such a conclusion, future research should focus on longitudinal and quasi-experimental study designs to draw conclusions on causality. Further research is also needed to determine whether access to and utilization of maternal health services actually ensures access to skilled birth attendance and improves mother and newborn health outcomes. A recent study in Zambia (Biemba *et al.*, 2014) showed that many women who went to deliver at the health centre did not receive care from skilled birth attendants and that TBAs still play an important role in providing delivery services both at home and at healthcare facilities.

In addition, since findings from the cross-sectional study reported in Chapter 7 suggested a unique role that MWHs play in enhancing women's risk perception regarding the severity and personal susceptibility to pregnancy and childbirth-related complications, there is need for further research, preferably randomised control trials in design, to confirm this association. Our study showed that respondents who used a health centre with a MWH were more than ten times more likely to believe they were personally at risk for pregnancy and childbirth related complications, compared to those who used health centres without a MWH, and this effect remained after controlling for possible confounding variables such as age and number of children. Moreover, further research is needed to determine the source of the perception of injunctive norms in favour of using MWH, as well as to investigate the effect of the health promotion programmes on the perception of these norms.

Finally, our findings suggest a need for further research to evaluate the effectiveness of community-cantered interventions such as the SMAG programme and the provision of non-financial incentives (Wang *et al.*, 2016) in promoting utilization of facility-based delivery services. Further, a cost-effective analysis of these interventions is needed to guide policy directions in the selection of interventions to be adopted by the Ministry of Health. Currently, the relative impact and cost-effectiveness of the interventions being implemented in Zambia remain largely unknown, and this lack of information complicates the decision about which interventions to adopt and scale up in resource-limited countries such as Zambia (MOH and MCDMCH, 2013).

Strengths and limitations

A main strength of this dissertation is its use of mixed methods, both qualitative and quantitative, to explore the issues under investigation. Qualitative studies have the advantages of being flexible, and tend to focus on people's actual lived experiences, which allows for an inductive exploration of the phenomenon under investigation (King & Horrocks, 2010). Quantitative studies, on the other hand allow for a deductive investigation of the identified factors. Thus, the combination of the qualitative and quantitative methods in this dissertation, allowed for an inductive exploration and deductive investigation and provided insight into the subject under study. Moreover, the convenience and multi-stage sampling technique used in the qualitative studies ensured selection of participants who had similar experience regarding the subjects under investigation, while, at the same time, allowing for recruitment of respondents with different characteristics in terms of their age, number of children, marital status, and education level, which helped provide insight into the similarities and differences in their experiences. Moreover, the use of both in-depth interviews and focus group discussions with different respondents allowed for triangulation of the findings which ensured comparing and contrasting of the findings. Further, the inductive approach in the data analysis ensured internal validity of the qualitative findings.

The other strength of this research is its use of large samples in the quantitative studies reported in Chapters 3 and 7 (n=1007, and n=340, respectively) which allowed enough power to detect any important effects present in the study population, and increased the external validity of the findings. Indeed, as can be seen from our findings, they are comparable to those of other previous studies in the region as well as the recent demographic and health surveys (CSO, 2009; CSO, 2014). Moreover, the use of the qualitative findings as well as other previous studies in the region to develop the questionnaires ensured internal validity of the instruments.

Further, the use of a logic model which was based on the PRECEDE part of the Green and Kreuter's PRECEDE/PROCEED (Green & Kreuter, 2005) model allowed for a systematic approach to the investigation of the phenomenon of interest. The current research used the constructs of the model, including the predisposing, reinforcing and enabling factors to guide the exploration of the issue under investigation. The important predisposing factors which were identified included knowledge, awareness and risk perception about the complications of pregnancy and childbirth. The enabling factors included the need to establish and equip MWHs and labour wards, improve staffing levels in health facilities, and to provide resources to pregnant women to meet transport costs and procure food and other requirements such as cleaning materials, and mother and baby packs for use at the health centre. The main reinforcing factors which were identified to influence maternal health seeking in this research were the social norms and the need for support from important family members such as the husbands.

Moreover, the inclusion of socio-cognitive models in the logic model, such as the Reasoned Action Approach (Fishbein & Ajzen, 2010) and the Health Belief Model (Conner & Norman, 2005), provided further structure and guided the exploration and identification

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of the proximal antecedents of behaviour such as attitude, subjective norms, perceived behavioral control, intention, perceived benefits and barriers, perceived severity and personal susceptibility and risk perception.

A number of potential limitations of this research should be noted. First, like other qualitative studies, the findings of our qualitative studies may not be generalisable. The purpose of the research was to gain insight into the factors affecting utilization of maternal healthcare services. Second, the focus of the research was on a rural district which is predominantly Tonga, making the findings not representative of other tribal groupings in Zambia. Moreover, the sampling technique used meant that only respondents who were assumed to have insight into the issues of interest were selected. These criteria might have introduced a selection bias. Moreover, the reported findings are only based on the experiences of the respondents who agreed to participate in the focus group discussions and in-depth interviews. The views of other community members were not explored. This might have introduced some information bias into the reported findings. For these findings to be generalised, further research needs to be conducted using quantitative methods. Moreover, further research should use systematic sampling techniques and cover more than one region (or district) in order to measure the determinants that were identified.

A major limitation with regard to the quantitative studies could be the use of the Likert scale with response options, which participants might have had problems to understand. For example, during field work, research assistants observed that participants had problems in differentiating between “I strongly agree” and “I agree” in the questionnaire. This could have led to the skewness of the findings reported in the quantitative studies. Moreover, the high illiteracy levels in the area made it difficult for the respondents to read through the questionnaire without assistance. The findings reported in the two quantitative studies are based on interviewer-administered questionnaires. The interviewees’ responses may have been influenced by the interviewer’s presence, and the manner in which the questions were posed. Moreover, the use of male interviewers in the second study (Chapter 3) may be of concern, especially in rural Zambian culture where men play a dominant role in decision-making and consequently some women may not have felt free to express their opinions. To mitigate these limitations, further research should use research instruments with less complex Likert scales, preferably with few response options. Moreover, to increase the internal validity, research instruments need to be pre-tested among a representative sample, and revised accordingly. Moreover, to minimise interviewer bias, further research needs to identify methods on how best to administer questionnaires among illiterate respondents.

Conclusion

This dissertation has explored and identified important factors that affect utilization of maternal healthcare services in rural Zambia. This information can be used to develop systematic evidence-and theory-based interventions to mitigate these barriers, increase utilization of maternal health care services, and ultimately improve maternal and newborn health outcomes in Zambia. Specifically, this dissertation recommends the development

and implementation of community-centred interventions such as: 1) A SMAG program to improve women's awareness and risk perception about pregnancy and labour complications, empower them with skills to make decisions, and motivate them to use facility-based maternal healthcare services; 2) Health promotion interventions that focus on provision of non-financial incentives including mother and baby packs to pregnant mothers; 3) The establishment and improvement of quality of services in MWHs; 4) Expanding and equipping labour wards with medical equipment and supplies; 5) Improvement of staffing levels in health facilities; and 6) Development and support of collaboration and trust between community-based maternal healthcare providers and the formal health system in rural Zambia. Finally, due to limited resources in the country, it would not be feasible to adopt and implement all the suggested interventions. Thus, this dissertation recommends using evidence and theory-based methods to evaluate these interventions in order to determine their cost-effectiveness and relative impact in order to guide policy direction, and the systematic development, adoption and implementation of the recommended health promotion interventions.



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Summary

Limited access to and low utilization of facility-based maternal healthcare services have been shown to be the main reasons for the high maternal mortality ratio in Zambia (CSO, 2014). The aim of the research presented in this dissertation was to explore and investigate the psychosocial and environmental factors that affect utilization of maternal healthcare services in Kalomo, Zambia. We conducted several empirical studies (chapter 2 to 8) to explore the factors that affect utilization of maternal healthcare services in Kalomo, Zambia.

The qualitative study reported in **Chapter 2** aimed to explore the psychosocial and environmental factors that affect utilization of maternal healthcare services in Kalomo, Zambia. Data for this study were collected from twelve focus group discussions (n=141) with women of reproductive age (15-45 years), who gave birth within the previous year, and from 35 in-depth interviews with traditional leaders, mothers, fathers, community-health workers, and nurse-midwives, which were conducted in six health centre catchment areas. Perspectives on maternal health complications, health-seeking behavior and barriers to utilization of maternal healthcare were explored. The findings showed that most women had insight into maternal health complications. Nevertheless, they started antenatal care visits late and did not complete the recommended schedule. Moreover, most women gave birth at home and did not use postnatal care. The main reasons for the low utilization were the low perceived quality of maternal healthcare services in clinics (negative attitude), negative opinion of important referents (subjective norms), physical and economic barriers such as long distances, high transport and indirect costs including money for baby clothes and other requirements.

Chapter 3 reports findings of a quantitative study which aimed to identify important personal and psychosocial factors which predict a woman's intention to use maternal healthcare services in Kalomo, Zambia. Data for this study were collected using an interviewer-administered questionnaire which was administered among 1007 women of reproductive age (15-45 years) from 13 rural health centres with the lowest service utilization rates in the district. Questions included measures of (past) health-care seeking behavior, psychosocial variables (attitude, perceived social norms, perceived behavioral control), logistical barriers (e.g. distance to the clinic), and socio-demographic variables (e.g. age, income and education level). The findings of this study showed that most respondents had high intention to use healthcare services. Intention was positively associated with attitude, personal norms, behavioral control, education and income levels. Conversely, intention was negatively related to perceived social norms, age and distance. Multivariate regression analysis showed that, together, these variables accounted for 41.8% of the variance in intention, with perceived behavioral control being the strongest unique predictor of intention, followed by geographical distance and perceived social norms.

Summary

In **Chapter 4**, reasons motivating women to give birth at home and seek the help of traditional birth attendants (TBAs) were explored. Data for this study were collected from ten focus group discussions (n=100) with women of reproductive age (15-45 years), and from 30 in-depth interviews with 5 TBAs, 4 headmen, 4 husbands, 4 mothers, 4 neighbourhood health committee (NHC) members, 4 community health workers (CHWs) and 5 nurses in five health centre catchment areas with the lowest institutional delivery rates in the district. Perspectives on TBAs, the decision-making process regarding home delivery and use of TBAs, and reasons for preference of TBAs and their services were explored. The findings showed several reasons that prevent women from giving birth at the health centre, and also those that motivate women to give birth at home and use the services provided by TBAs. The main reasons preventing women from giving birth at the health centre included women's lack of decision-making autonomy regarding child birth, dependence on the husband and other family members for the final decision, and various physical and socioeconomic barriers including long distances, lack of money for transport and the requirement to bring baby clothes and food while staying at the clinic, prevented them from delivering at a clinic. Further, the findings showed that the main reasons motivating women to give birth at home were socio-cultural norms regarding childbirth, and negative attitude towards the quality of services in the facilities. The main reasons for preferring the services provided by the TBAs included women's positive attitude towards TBAs, perceiving TBAs to be respectful, skilled, friendly, trustworthy, and available when they needed them. The findings reported in these chapters (Chapter 2, 3 and 4) can serve as a starting point for the design of public health interventions that focus on increasing the utilization of maternal healthcare services and improve maternal and newborn health outcomes.

Chapter 5 aimed to explore the women's experiences and beliefs concerning utilization of maternity waiting homes (MWHs) in rural Zambia. Data for this qualitative study were collected from 32 in-depth interviews with women of reproductive age (15-45 years) from nine health centre catchment areas, 22 of which were conducted in 7 health centres with a MWH, and 10 were conducted in 2 health care facilities without a MWH. Women's perspectives on MWHs, the decision-making process regarding the use of MWHs, and factors affecting utilization of MWHs were explored. The findings showed that most women appreciated the important role MWHs play in improving access to skilled birth attendance and improving maternal health outcomes. However several factors such as women's lack of decision-making autonomy, prevalent gender inequalities, low socioeconomic status and socio-cultural norms prevent them from utilising these services. Moreover, lack of funds to buy the requirements for the baby and mother to use during labour at the clinic, concerns about a relative to remain at home and take care of the children and husband, and concerns about the poor state and lack of basic social and healthcare needs in the MWHs – such as adequate sleeping space, beddings, water and sanitary services, food and cooking facilities as well as failure by nurses and midwives to visit the mothers staying in the MWHs to ensure their safety, prevent women from using MWHs.

In **Chapter 6**, husbands' experience and beliefs regarding the use of maternity waiting homes (MWHs) in Kalomo District, Zambia were explored. Data for this study were collected from 24 in-depth interviews with the husbands aged 18-50 years who were married to the women of reproductive age, who were attending the under-five clinic at a health center with a MWH, and who had lived in the area for more than 6 months. The findings showed that husbands perceived many potential benefits of MWHs, including improved access to facility-based skilled delivery services and treatment in case of labor complications. Their many roles included decision making and securing funds for transport, food, cleaning materials, and clothes for the mother and the neonate to use during and after labor. However, limited financial resources made it difficult for them to provide for their wives and newborns, and usually led to husbands' delay in making decisions about MWH use. Poor conditions in MWHs and the lack of basic social and healthcare needs meant some husbands had forbidden their wives from using the facilities.

In **Chapter 7**, findings of a quantitative study are presented in which we aimed to confirm the relevance of the personal and environmental factors in explaining the use of MWHs, and compare the relevance of these factors between those with access and those who do not have access to MWHs. Data for this cross-sectional study were collected using an interviewer-administered questionnaire among 340 women of reproductive age in 15 rural health centres (that is, 203 from 10 clinics with MWHs and 137 from 5 without) in Kalomo district, Zambia. Questions included socio-demographic variables (age, parity, education, income level, and distance to the clinic), measures of past healthcare seeking behaviour, psychosocial variables (cognitive attitude, affective attitude, descriptive norms and injunctive norms, perceived behavioural control, risk perception and perceived barriers). Strong negatively skewed data patterns on the measures of interest prevented the use of regression analysis. Instead, scores of participants with and without access were compared on the outcome measures using tests of association (Chi-square, odds ratio) and mean difference scores (*t*-test). The findings showed that compared to respondents from health centres without MWHs, those from centres with MWHs were more likely to express a willingness to use MWHs, to perceive benefits from using a MWH, to perceive staying in a MWH as enjoyable, to perceive more social pressure from the important others to use MWH, to perceive personal risk from pregnancy and childbirth related complications, to go and stay at the clinic before delivery, to give birth at a health facility, and to receive care from a skilled birth attendant. In contrast, these respondents were less likely to perceive descriptive norms towards the use of a MWH, and less likely to perceive barriers regarding the use of a MWH. There was no significant association between the presence of a MWH and perceived behavioural control development of complications after childbirth, or use of antenatal and postnatal care. The results presented in chapter 5, 6 and 7 can serve as a basis for public health interventions focusing on improving access to MWHs and facility-based skilled birth attendance.

Summary

Chapter 8 aims to investigate the role of Safe Motherhood Action Groups (SMAGs) increasing utilization of skilled facility-based maternal healthcare services in rural Zambia and explores the perspectives, roles, achievements and challenges of the SMAG program in Kalomo, Zambia. Data for this study were collected from 46 in-depth interviews with 22 SMAG members, including 5 headmen, 10 mothers, 3 husbands, 5 nurses and 1 district maternal and child health coordinator conducted in 7 health centers in Kalomo district. Perspectives on the selection, training, roles, achievements and challenges of the SMAG program were explored. The findings demonstrated that respondents were aware of the presence, selection, training and roles of the SMAG members and had a positive attitude towards the programme. They believed that the SMAG programme led to an increase in women's risk perception about pregnancy and childbirth-related complications. Further, participants believed that the programme led to an increase in the women's utilization of facility-based antenatal, delivery and postnatal care, and thereby resulted in improvement in maternal and newborn health outcomes. However, various challenges affected implementation of the SMAG programme. Among these were lack of material and financial support to the programme, lack of refresher training for SMAG members, poor quality of care in health care facilities due to a lack of MWHs, low staffing levels in health facilities, the poor state and small size of the labour wards, and lack of equipment to handle obstetric emergencies. These findings suggest that a community-centred intervention such as a SMAG programme might be an important intervention for increasing utilization of facility-based skilled care and improving maternal and newborn health outcomes. Finally, **Chapter 9** provides a general discussion of all the empirical studies presented in this dissertation, and discusses the results in light of the existing literature, highlights the strengths and limitations of these studies, and the methods used to conduct the current research, and discusses the implications of the research findings which lead to recommendations for future research, and the development of new intervention programmes.

Valorisation

This section describes the social and economic value of the research presented in this dissertation. It highlights the relevance of the findings and the target group, describes implications for intervention development to improve utilization of maternal healthcare services in rural Zambia and other sub-Saharan African countries, suggests areas for future research, and highlights social and economic implications for future interventions and research.

Relevance and knowledge value

Given the prominence of maternal health at the global level, we feel this research, focusing on the factors affecting utilization of maternal healthcare services in rural Zambia, is relevant and its findings make an important contribution to the global maternal health agenda. Our research was firmly grounded in theory, such as the PRECEDE part of the Green and Kreuter's (2005) PRECEDE/PROCEED model, as well as socio-cognitive models, including the Theory of Reasoned Action Approach (Fishbein & Ajzen, 2010) and the Health Belief Model (Conner & Norman, 2005). These models were used to guide the exploration and investigation of the phenomenon under consideration. Moreover, we used mixed methods – that is, qualitative and quantitative – approach to data collection and used different investigation techniques such as in-depth interviews, focus group discussions and questionnaires. We also made sure to include a variety of respondents, ranging from mothers and fathers, to health workers and community leaders. We feel that these factors have increased the external validity of our findings.

Innovation

Much research in Zambia has been conducted in urban areas, and currently, little is known about women's experiences in rural areas of the country. The research reported in the current dissertation aimed to fill part of this gap by focusing on one of the poorest areas in rural Zambia: Kalomo district.

In addition to replicating earlier studies which reported low utilization of maternal healthcare services in rural Zambia and other developing countries, we believe our findings are innovative and make an important contribution to the understanding of maternal healthcare-seeking behaviour. The findings highlight an intention-behaviour gap regarding the use of maternal healthcare services in rural Zambia – that is, although women express a positive attitude towards maternal healthcare services and a willingness to use them, most do not actually utilise these services, due to various factors. Further, our findings provide

insight into the factors that affect (non) use of maternal healthcare services, and clearly show that a lack of knowledge about pregnancy and labour complications is *not* the reason for the low utilization of maternal healthcare services. Most women are aware of the benefits to be gained from the use of maternal healthcare services provided by skilled attendants in health care facilities. Rather, our findings show that several other factors prevent women from acting on their intentions. In addition to physical and economic barriers, our data showed that perceived social norms regarding the use of maternal healthcare services – such as a lack of family support, a lack of decision-making autonomy and dependence on husbands for decision-making and financial support – all prevent women from using maternal healthcare services. Thus, our findings highlight the complexity of maternal healthcare use and the interplay of different factors in determining women’s health seeking behaviour. By publication of our findings in peer-reviewed international journals, we believe we have contributed to the global pool of knowledge in the field of global maternal health.

Our findings are targeted at a wide audience such as the multilateral, bilateral and national organizations including the World Health Organization, World Bank, UNFPA, and UNICEF. Other target groups include public health policy makers in the Ministries of Health and Ministries of Finance, health planners, implementers and practitioners and, and, of course, service users such as the pregnant women and their families, and the communities in which they live.

Implications for implementation and research

Our findings have implications for policy and intervention development, provide a basis for future research directions in maternal health in Sub-Saharan Africa, and can serve as a basis for the systematic development of theory- and evidence-based interventions using a framework such as Intervention Mapping (described in Chapter 9). Such interventions should focus on mitigating the factors leading to the intention-behaviour gap highlighted in this dissertation – including long distances to the health centres – for example, through the establishment of more maternity waiting homes where women can stay and wait for their labour, and which are situated close to the health centre where they can receive skilled birth attendance. Moreover, for optimal use of maternity waiting homes, our findings suggest that interventions should focus on improving the social services and living conditions in these facilities, by providing beddings, bathing and cooking facilities, and ensuring privacy.

In addition, where possible, interventions should focus on mitigating economic barriers, such as providing pregnant with resources to enable them to meet transport costs and enable them to buy requirements during delivery at the clinic, such as baby and mother packs. The current findings also suggest a need for the establishment and implementation of community-centred interventions which could be modelled on the Safe Motherhood Action Groups (SMAGs). Given the influence of social norms, the establishment of such community groups could lead to an increase in women’s risk perception about pregnancy

and childbirth-related complications, and motivate them to use facility-based maternal healthcare services. Moreover, such programmes could mitigate the various socio-cultural inhibiting norms highlighted in this dissertation, by encouraging husbands to get involved in maternal healthcare services and empowering pregnant women with the skills necessary to use their decision-making capacity and negotiate with their husbands. Further, husbands should be motivated to support their wives to use facility-based antenatal, delivery and postnatal care. Moreover, our findings suggest that community-centred interventions could strengthen the relationships and trust between the formal health system and other important stakeholders such as the traditional birth attendants, headmen and neighbourhood health committee (NHC) members. Finally, our findings suggest a need to improve the quality of basic and comprehensive obstetric care (EmONC) in healthcare facilities in rural Zambia, and other sub-Saharan African countries, to improve staffing levels for nurses and midwives, and to put effort into constructing and equipping of maternity blocks, operating rooms, laboratories, staff houses and installation of solar panels, standby generators, and water supply systems. However, we suggest a need for further research to ensure the generalisability of these findings to other areas within the country, and to evaluate the effectiveness of the above-mentioned interventions.

Socio- economic value and risk

The findings of this research have both an economic and a social value as they clearly highlight important factors that lead to low utilization of maternal healthcare services. Moreover, mitigating these barriers is likely to lead to an improvement in maternal and newborn health outcomes, which will ultimately result in the improved quality of life for women and their families. This improved quality of life is likely to result in an increased national productivity, reduction in individual and national expenditure on maternal and newborn health complications, and ultimately lead to national socio-economic growth and development.



Acknowledgments

I wish to express my gratitude to the people and organisations that contributed to this PhD project. Firstly, my gratitude goes to my supervisors, Professor dr. Robert A.C. Ruiter, dr. Karlijn Massar and Professor dr. David H. Hamer for their unwavering and patient support, guidance and mentorship during the development of this work. My thanks also go to all my co-authors for their support and contributions. I also wish to extend my gratitude to the following people who contributed to this project in various ways: Dr. Prisca Zwanikken of the Royal Tropical Institute in Amsterdam (KIT), for inspiring me to enrol into the PhD programme and introducing me to Maastricht University; Professor dr. Gerjo Kok for introducing me to the Faculty of Psychology and Neuroscience as a new PhD student and arranging for my supervisor. My gratitude also goes to ms Mariella Muermans for her patience, support and having been there for me whenever I needed help regarding my travel, accommodation, training and many other administrative procedures.

I am also indebted to the following organisations for supporting this project: NUFFIC, for awarding me the fellowship, grant number PhD/367, to undertake this project; the Zambia Ministry of Health, Kalomo District Medical Office and the health centres staff for their support during the research process. My thanks also go to the research assistants and the many people who participated in this research.

To my family, friends and colleagues, thank you for your unwavering support and love. Special thanks go to Sarah, my dear mother, who took me to school at the age of 13 years, and Samuel, my father, who motivated me to "work hard and always do my best for good results" in life. My heartfelt gratitude goes to Sthandiwe, my wife, for her unfailing love, support and patience, and the role she played in taking care of our children in my absence. To Choolwe, Lweendo and Cephass Junior, thank you for your understanding and patience when I was away and could not provide you with the love and attention you needed.



Curriculum Vitae

Cephas Sialubanje was born on 12th February, 1972, in Kalomo district, Zambia, where he grew up and attended primary school. He went to Rusangu Secondary School in Monze, and completed his high school education from David Kaunda Secondary Technical School in Lusaka in 1993. In 1995 he proceeded to the University of Zambia to study medicine, where he obtained his medical doctor degree (MBChB) in 2002. In 2003, he joined the Ministry of Health as an intern medical doctor, and later got promoted to the position of District Medical Officer. In 2009, while working as a District Medical Officer in rural Zambia, Cephas was offered a NUFFIC fellowship to pursue a training in Public Health at the Royal Tropical Institute (KIT) under Vrje Universiteit in Amsterdam, where he obtained his Master of Public Health (MPH) degree in 2010. In January, 2013, he received yet another NUFFIC scholarship for his PhD research project focusing on Maternal Health in rural Zambia tenable at Maastricht University, which is reported in this dissertation.



Appendix

Table A: Factor analysis and items used in the measure reported in Chapter 7.

Cognitive attitude
17 items; Cronbach's alpha=.75; Mean (SD)=4.28 (0.06)

1. I consider a clinic with a mothers' shelter more *beneficial* to the mother and baby than a clinic without a mother's shelter.
2. Staying in the mother' shelter is *important* because it prevents women (who live far from the clinic) from giving birth at home or on the way to the clinic
3. Staying in the mother' shelters is *helpful* as it makes it *easier* for women who live far from the clinic to give birth at the health centre
4. Staying in the mother's shelters will *help* mothers receive assistance from a skilled birth attendant (nurse, midwife) **during labour**
5. Waiting in the mothers' shelter will help mothers who live far from the clinic to receive care from the nurses and midwives at the clinic **after giving birth**
6. Staying in the mothers' shelter will help prevent labour complications for the baby and mother who live far from the clinic
7. Staying in the mothers' shelter will help prevent complications for the mother and her baby **after labour** for the mothers who live far from the clinic
8. I would rather deliver at a clinic with a mother's shelter than one without a mother's shelter
9. Going early to the mother's shelter to wait for delivery from there is *wiser* than waiting for delivery at home until the woman is in established labour
10. Staying in the mothers' shelter at the clinic is beneficial to the mother and baby as it would help them receive care from the midwife/nurse during labour and thus reduce complications
11. Staying in the mothers' shelter (if present) after giving birth is *important* as it helps mothers living far from the clinic receive **postnatal care** from a skilled attendant at the clinic in order to prevent potential complications to the mothers and baby
12. Waiting at the mother's shelter will assist women find assistance from the nurses and midwives if they develop labour complications
13. Waiting for delivery at the mothers' shelter prevents pregnant women from reaching the clinic late due to long distances and lack of transport
14. Husbands and other family members should allow their wives to wait for labour in the mothers' shelter if they live far from the clinic
15. For the husbands who live far from the clinic, allowing their wives to wait for delivery in the mothers' shelters is *wise* as they know their wives are safe there
16. Allowing pregnant women to stay in the mothers' shelter while waiting for delivery *hurts* the husbands and children as it takes the woman away from them
17. Staying at the mothers' shelter while waiting for delivery *hurts* the pregnant woman as it separates her from her husband and children

Appendix

Affective Attitude

7 items; Cronbach's alpha=.72; Mean (SD)=3.52 (0.54)

1. Staying in the mother's shelter while waiting for delivery will be *safe*
 2. Compared to the clinics without a mother's shelter, waiting for labour in the mothers' shelters would be more *enjoyable* to the pregnant women
 3. Compared to the clinic without a mothers' shelter, staying at the clinic with a mothers' shelter while waiting for labour will be *pleasant*
 4. Compared to the clinics without mothers' shelters, sleeping conditions at the clinic with a mothers' shelter will be *pleasant*
 5. Compared to the clinics without mothers' shelters, clinics with mothers' shelters will provide more *enjoyable* bathing and washing conditions for the pregnant mothers
 6. Mothers' shelters would provide more *satisfactory* cooking facilities for the pregnant women and their relatives
 7. Compared to waiting for delivery from home and only going to the clinic when in established labour, waiting for delivery at the mothers' shelters will be *stressful* to the due to lack money for food and other requirements
-

Descriptive Norms

13 items; Cronbach's alpha=.76; Mean (SD)=3.69 (0.16)

1. Many women in my community who live far from the clinic prefer giving birth at clinic with a mothers' shelter (if they are present)
 2. Many people in my community believe that clinics with mothers' shelters are more beneficial as they can help women who live far from the clinic to deliver at the clinic
 3. Many people in my community believe that mothers' shelters are beneficial to the mothers who live far from the clinic as they can go and stay there and wait for
 4. Many women in my community believe that, to avoid labour complications, women should go and stay in the mothers' shelter as they wait for labour
 5. Many women in my community who live far from the clinic prefer clinic with a mothers' shelter (if they are present) rather than those without a mothers' shelter
 6. Many women in my community depend on other family members to decide for them on whether they should go and stay in the mothers' shelter or not
 7. Many women are happy with other people in the family and community deciding for them on whether they should go and stay in the mothers' shelter or
 8. In my community, husbands are the ones who decide on whether the woman should go and stay in the mothers' shelter or not
 9. In my community many husbands provide resources for their wives to use while waiting for labour at the mothers' shelter
 10. Many husbands allow their wives to leave home to go and deliver at the clinic
 11. In my community parents and mothers-in-law are the ones who decide on whether the woman should deliver at the clinic or not
 12. In my community traditional birth attendants are the ones who decide on whether the woman should deliver at the clinic or not
 13. In my community, headmen and the chief are the ones who decide on whether the woman should deliver at the clinic or not
-

Injunctive Norms**9 items; Cronbach's alpha=.82; Mean (SD)=4.90 (0.20)**

1. If I live far from the clinic, my husband would approve of my delivering at a clinic with a mothers' shelter rather than at the clinic with no shelter
2. My husband would be more likely to approve of my delivering at a clinic with a mother shelter than at a clinic without a mothers' shelter
3. My husband would approve of my leaving home to go and stay in the mothers' shelter as I wait for delivery at the delivery at the clinic
4. My children would approve of my leaving home to go and stay in the mothers' shelter as I wait for delivery at the clinic
5. My parents and mother-in-law would approve of my leaving home to go and stay in the mothers' shelter as I wait for delivery at the clinic
6. TBAs in my community would approve of my leaving home early to go and stay in the mothers' helter as I wait for labour at the clinic
7. Important people in my community including the headmen approve of my leaving home to go and wait for delivery at the clinic
8. Important people in my community including nurses, neighbourhood health committee members (NHCs) and Community Health workers (CHWs) would want me to leave home to go and stay in the mothers' shelter as I wait for labour at the clinic
9. I want to do what my husband, children and other family members want and stay in the mothers' shelter while waiting for labour

Perceived Behavioral Control**15 items; Cronbach's alpha=.73; Mean (SD)=4.24 (0.08)**

1. Compared to a clinic without a mothers' shelter, a clinic with a mothers' shelter would make it easier for me to wait for delivery from the clinic
2. Compared to a clinic without a mothers' shelter, a clinic with a mothers' shelter would make it easier for me to give birth at the clinic
3. Compared to the clinic without a mothers' shelter, a clinic with a mothers' shelter makes it easier for me to receive skilled care from the midwives and other clinic staff during delivery at the clinic
4. The desire to have the baby examined would make it easier for me to stay for a few days (hours) after delivering in order for me and the baby to be examined by the midwives/nurses at the clinic
5. Being accompanied by a relative would make it easier for me to stay in the mothers' shelter as I wait for labour at the clinic
6. Provision of beddings to the mothers by the clinic staff would make my stay in the mothers' shelter more *manageable* as I wait for labour at the clinic
7. Provision of food to the mothers would make my stay in the mothers' shelter more *feasible*
8. Provision of food to the mothers would make my stay in the mothers' shelter more *feasible*
9. Regular visits by midwives and other clinic staff to see if I need help would make my stay at the mothers' shelter *more feasible*
10. Compared to a clinic without a mothers' shelter, a clinic with a mothers' shelter would make prevention of complications to the mother and baby *more feasible* as accompanying relatives can easily walk to the clinic to inform midwives and other clinic staff in case of complications
11. Compared to a clinic without a mothers' shelter, a clinic with a mothers' shelter would make prevention of complications to the mother and baby *more feasible* as the mother can easily walk to the clinic to get help from the midwives and other clinic staff in case of problems

Appendix

12. I am confident I can leave home early enough to go and stay in the mothers' shelter as I wait for labour at the clinic
 13. I am confident I can decide on my own to go and stay at the mothers' shelter as I wait for labour at the
 14. I am confident that I can go and stay in the mothers' shelter as I wait for labour even without things to use at the clinic (money or food)
 15. I am confident that I can go and stay at the mothers' shelter to wait delivery even if other people in my community might have negative opinions about staying in the mothers' shelters
-

Risk Perception

5 items; Cronbach's alpha=.83; Mean (SD)=4.98 (0.10)

1. I believe pregnancy complications (i.e. bleeding, pre-eclampsia) are very severe
 2. I believe labour complications such as obstructed labour, bleeding and , pre-eclampsia are very severe
 3. I believe that complications require a skilled attendant' assistance
 4. I believe that, all pregnant women (regardless of age, number of children and history of past delivery) are at risk of these complications
 5. I believe that I am personally at risk of developing complications during pregnancy and labour
-

Perceived Barriers

14 items; Cronbach's alpha=.70; Mean (SD)=2.37 (0.17)

1. Concerns about who to leave the children with
 2. Concerns about one's husband and marriage
 3. Concerns about who to accompany and cook for her at the mothers' shelter
 4. Concerns about safety at the mothers' shelter
 5. Concerns about sleeping conditions (including beds and mattresses) in the mothers' shelters
 6. Concerns about availability of blankets in the mothers' shelters
 7. Concerns about lack of privacy in the mothers' shelters
 8. Concerns about water for bathing for the pregnant woman at the mothers' shelters
 9. Concerns about money for food, baby clothes and other requirements (like jik, plastic paper)
 10. Concerns about people to accompany and stay with me in the mothers' shelter
 11. Concerns about the husband refusing to allow the wife to go and stay at the mothers' shelter
 12. Concerns about transport to the clinic and going back home after delivering at the clinic
 13. Concerns about availability of nurses and midwifery to assist me in case of pregnancy or labour complications like breeding, high blood pressure, fitting) during my stay in the mothers' shelters
 14. Concerns about lack of privacy in the labour ward when I go into labour
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