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Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Adolescent Girls and Young Women in Harare, Zimbabwe

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UNDERSTANDING CONCEPTUALIZATIONS AND STRUCTURAL ENVIRONMENT FOR IMPROVING PRE-PREGNANCY PLANNING FOR ADOLESCENT GIRLS AND YOUNG WOMEN IN HARARE, ZIMBABWE

by

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DEDICATION

I dedicate this research to my family. To my dearest mother, Gloria Chiedza Tinago for being my rock throughout this process. I appreciate all the sacrifices you make for me and my sisters and for believing in us and our capacity to break through barriers as women and girls. You are my greatest advocate and I share this accomplishment with you. To my dearest father, Brian Alphabet Tinago, I thank you for believing in educating the girl child and for sacrificing to send all your girls to the best schools so that we could realize our dreams through a sound education. To my older sister Chidochashe, I've always thought you could do anything you put your mind to and I am truly appreciative for your encouragement and support throughout this process. To my loving twin sister and womb-mate Chatinoda, you are the constant in my life. A constant source of support, guidance, encouragement, and laughter. You always say, "We are built for teamwork", and I agree. Thank you for always standing by me because together we are stronger. To my youngest sister Chamapuwa, I thank you for being a light in my life and for reminding me to see the good in all things. It's your turn now. To my maternal grandparents Leonard Chipindu and Loice Mukwenga, and paternal grandparents David and Enesta Tinago, your granddaughter is getting a PhD! I hope you're celebrating in heaven. My final dedication is to the research participants. Thank you for trusting me to share your stories and for reminding me to continue in sincerity and fortitude because there is still work to be done.

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ABSTRACT

Zimbabwe has a high maternal mortality with adolescent girls and young women facing disproportionately high risk of maternal morbidity and mortality. Current approaches to reducing maternal mortality in Zimbabwe focus on the pregnancy period with antenatal care, obstetric care, and micronutrient supplementation during pregnancy. Although important, these approaches are not reaching a large number of women and may benefit from integration with pre-pregnancy approaches. The importance of pre-pregnancy interventions to promote young women's health has been emphasized, yet many young women in developing countries like Zimbabwe do not have access to pre-pregnancy care because little is understood about the concept of pre-pregnancy planning. Furthermore, it is unknown which interventions will have the greatest impact on maternal outcomes of women in these countries. The purpose of this research was to work collaboratively with adolescent girls, young women, and key stakeholders in Harare, Zimbabwe to bridge the knowledge gap around pre-pregnancy planning and to inform the development of a pre-pregnancy planning intervention. Interview data were collected from June-August 2015 from adolescent girls and young women (14-24 years) (n=48) and key community stakeholders (n=24) from two low-income high-density communities in Harare. Sixteen focus groups were also conducted in November 2015 with females aged 14-24 years, healthcare workers, and partners of females aged 14-24 years (n=134). Qualitative analysis with Nvivo 10 software indicated that adolescent girls and young women conceptualized pregnancy across 8 themes: carrying a child, motherhood, the best

time for pregnancy, pregnancy decision makers, who is responsible for the pregnancy, pregnancy burden, pregnancy dangers, and increase in social status with pregnancy. Participants expressed mixed views concerning the possibility of planning a pregnancy and described pregnancy planning across the pre-pregnancy, pregnancy and post-pregnancy phases. Key community stakeholders described a physical environment related to pregnancy and planning for pregnancy that was limited in programming targeting adolescent girls and young women and a social environment that was deeply rooted in culture and cultural practices. Focus group participants described potential pre-pregnancy efforts that included clinic programs, community outreach, edutainment, empowerment of young women, parent and partner involved or targeted programs, peer education, school programs, technology programs, and youth friendly environments. Findings suggest that considering the socio-sociocultural influences on pregnancy will be beneficial in developing pre-pregnancy efforts to improve maternal and child health in Zimbabwe.

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LIST OF ABBREVIATIONS

AIDS ..... Acquired Immunodeficiency Syndrome

ANC ..... Antenatal care

CDC ..... Centers for Disease Control and Prevention

HIV ..... Human Immunodeficiency Virus

IFA ..... Iron and Folic Acid

IMB ..... The Information-Motivation-Behavioral Skills Model

IUD ..... Intrauterine Device

LAM ..... Lactational Amenorrhea Method

MCHIP ..... Maternal and Child Health Integrated Program

MDG ..... Millennium Development Goal

MOHCC ..... Ministry of Health and Child Care

NHS ..... National Health Survey

PIH ..... Pregnancy-induced Hypertension

PITC ..... Provider Initiated Testing and Counseling for HIV

PMI ..... President's Malaria Initiative

PMTCT ..... Prevention of Mother to Child Transmission of HIV

UNAIDS ..... The Joint United Nations Programme on HIV/AIDS

WHO ..... World Health Organization

ZDHS ..... Zimbabwe Demographic and Health Survey

ZIMSTAT ..... Zimbabwe National Statistics Agency

CHAPTER 1

INTRODUCTION

Zimbabwe has a high maternal mortality ratio of 581 deaths per 100,000 live births and the five leading causes of maternal mortality, accounting for 80% of all maternal deaths, are preventable and are namely HIV/AIDS, pregnancy-induced hypertension/eclampsia, postpartum hemorrhage, puerperal sepsis, and malaria (Munjanja, 2009; ZIMSTAT, 2015). Maternal health has thus become an integral part of Zimbabwe's national health strategy and current approaches to reducing maternal mortality focus on the pregnancy period with an emphasis on antenatal care, obstetric care, and micronutrient supplementation during pregnancy.

Although important, these approaches are not reaching a large number of women due to delayed or non-uptake of antenatal care, home deliveries, low adherence to micronutrient supplementation in pregnancy, and structural challenges within the healthcare system such as staff shortages (City of Harare, 2012; Darnton-Hill, 2012; Gadaga, Madzima, & Nembaware, 2009; Munjanja, 2009; ZDHS, 2012). These barriers were also identified during a formative study identifying the factors influencing the utilization of iron and folic acid (IFA) supplementation among pregnant women in Harare, Zimbabwe (unpublished data). The dissertation research explored a new approach to reducing maternal mortality in Zimbabwe that identifies the time before pregnancy as a critical window for intervening to improve maternal and child health outcomes (Bhutta et al., 2013; Jack & Culpepper, 1990; Korenbrot, Steinberg, Bender, & Newberry, 2002;

Whitworth & Dowswell, 2009).

Pre-pregnancy health emphasizes that early prenatal care may already be too late and as such, we need to intervene before a woman contemplates pregnancy or becomes pregnant (Atrash, Johnson, Adams, Cordero, & Howse, 2006). Pre-pregnancy care, which is any intervention that seeks to improve the health of a woman before pregnancy, and pre-pregnancy planning, which is any effort to modify or sustain a woman's positive health and health behaviors before pregnancy, are both integral to promoting pre-pregnancy health (Jack & Culpepper, 1990; Johnson et al., 2006). The importance of pre-pregnancy interventions to promote health among adolescent girls and young women (14-24 years) has been emphasized, yet many young women in developing countries like Zimbabwe do not have access to pre-pregnancy care because little is understood about the concept of pre-pregnancy planning (Bhutta et al., 2013; Dean et al., 2013; Draper et al., 2014; Hanson, Gluckman, Ma, Matzen, & Biesma, 2012; Sawyer et al., 2012; Viner et al., 2012). Furthermore, it is unknown what interventions will have the greatest impact on maternal outcomes of women in these countries. As such, we need to gain a fundamental understanding about how adolescent girls and young women of childbearing age (14-24 years) conceptualize pregnancy, planning for pregnancy and the structural environment in which they live in order to effectively inform the development of behavioral change interventions around pre-pregnancy planning (Monterrosa, Pelto, Frongillo, & Rasmussen, 2012).

The dissertation research applied a participatory, holistic approach, to bridge the knowledge gap around pre-pregnancy planning in Zimbabwe. We worked collaboratively with adolescent girls and young women (14-24 years) and key stakeholders to inform the

development of a pre-pregnancy planning intervention with the hope of improving overall maternal and child health in Zimbabwe. The following is a description of the specific aims, background, significance, innovation, research plan and logistics of the dissertation research.

1.1 Overview of Study

The overall goal of the dissertation research was to explore pre-pregnancy planning among adolescent girls and young women (14-24 years) in Harare, Zimbabwe. The dissertation research was a qualitative study in Harare, Zimbabwe and addressed three specific aims.

Specific Aim 1 took an emic approach (Pelto & Pelto, 1978) to understand and describe how adolescent girls and young women (14-24 years) in Harare conceptualize pregnancy and planning for pregnancy, and how the aforementioned conceptualizations inform decisions about pregnancy and planning for pregnancy.

Research Question 1: How do adolescent girls and young women (14-24 years) in Harare, Zimbabwe conceptualize pregnancy and planning for pregnancy?

Research Question 2: How do conceptualizations of pregnancy and planning for pregnancy among adolescent girls and young women (14-24 years) influence their decisions related to pregnancy and planning for pregnancy?

Specific Aim 2 was to understand and describe the structural environment related to pregnancy and planning for pregnancy in Harare, Zimbabwe and its influences on pregnancy-related decisions and practices.

Research Question 3: What is the structural environment related to the pre-pregnancy period and pregnancy?

Research Question 4: How do elements of the structural environment impact pre-pregnancy planning?

Specific Aim 3 was to work collaboratively with adolescent girls and young women (14-24 years) with or without a previous or current pregnancy, healthcare workers, and partners of adolescent girls and young women to: 1) develop intervention protocol guidelines for a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe; 2) identify essential components of the intervention; 3) identify who, where, and when to potentially implement the intervention; and 4) identify potential channels for delivery of the intervention.

Research Question 5: What are participants' views concerning specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe and the preferred methods for delivering the intervention?

Research Question 6: What are participants' views concerning best practices for pre-pregnancy planning?

Expected outcomes for specific aim 1 were descriptions of how adolescent girls and young women (14-24 years) conceptualize pregnancy and planning for pregnancy and how the aforementioned conceptualizations inform decisions about pregnancy and planning for pregnancy. Expected outcomes for specific aim 2 were descriptions of the structural environment related to the pre-pregnancy period and pregnancy in Harare, Zimbabwe and how the structural environment may impact pre-pregnancy planning.

Expected outcomes for specific aim 3, were the identification of participants' views concerning specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention, the preferred methods for delivering the intervention, in addition to best practices for pre-pregnancy planning.

The dissertation research sought to bridge the knowledge gap around pre-pregnancy planning in Zimbabwe and add to our understanding of pregnancy and planning for pregnancy among adolescent girls and young women (14-24 years) in Zimbabwe. The dissertation research also shifted emphasis from treatment to the prevention of maternal illnesses, which is the core of public health. Currently, many women are not benefitting from approaches that target the pregnancy period alone, particularly in terms of antenatal care with delayed or non-uptake of these services, thus intervening before pregnancy presents an opportunity to reach these women. The dissertation research complemented existing efforts in Zimbabwe to improve maternal health that currently focus on the pregnancy phase, with the hope that coordinated efforts at addressing women's health before, during, and after pregnancy will result in improved maternal and child morbidity and mortality.

The results of this research will be used to guide the development of pre-pregnancy efforts that address participant identified pre-pregnancy health conditions or behaviors and intervention delivery methods, with an emphasis on prevention and informed decision-making to improve pre-pregnancy health. Since Zimbabwe currently has no national policy, nor do standard tools exist for the delivery of pre-pregnancy care services, this research may provide some foundational information in developing policies and resources around pre-pregnancy planning in the future. The following chapters

describe the background and significance of the research, the methodology used to collect and analyze research data, the research results presented in the form of two manuscripts, and a summary of findings, implications and recommendations for future research and practice.

CHAPTER 2

BACKGROUND AND SIGNIFICANCE

The following is a description of pertinent background information that guided the development of the dissertation research. The section begins with a description of the setting and an overview of maternal health, morbidity, and mortality in Zimbabwe. Factors that contribute to maternal health in Zimbabwe are then outlined with a description of the current Zimbabwe national health strategy and interventions to promote maternal health in the country. A new approach for improving maternal health in Zimbabwe is presented before finally outlining the gaps in the literature.

2.1 Setting

Zimbabwe is in south-east Africa and has a population of 12,973,808 with 6,234,931 males and 6,738,877 females (ZIMSTAT, 2013). Harare Province, which is the capital city of Zimbabwe and one of the 10 provinces in the country (Figure 2.1), is densely populated compared to the other provinces with a population of 2,098,199 accounting for 16.2% of the total population (ZIMSTAT, 2013). English and Shona are the official and predominant languages, respectively.

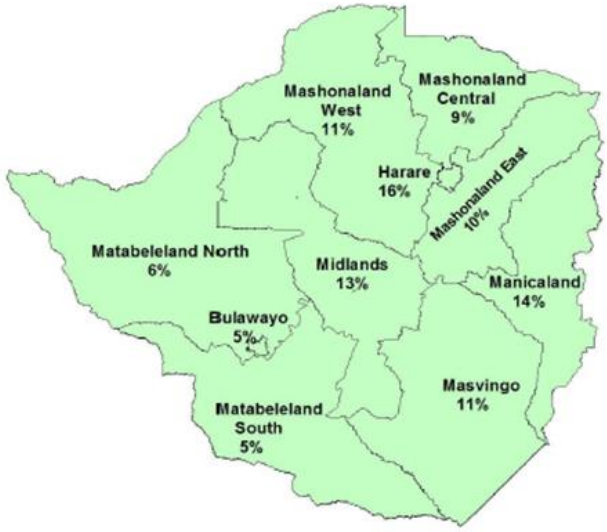

Figure 2.1 Distribution of Zimbabwean Population by Province *(Source: Zimbabwe Census 2012: Preliminary Report)*

2.2 Maternal Health, Morbidity, and Mortality in Zimbabwe

The 2010-11 Zimbabwe Demographic and Health Survey (ZDHS) is a commonly cited document throughout this section and it provides results from a nationally representative sample of nearly 11,000 households in Zimbabwe. Data were collected from September 2010 through March 2011 qualitatively through interviews and quantitatively though questionnaires, while anthropometry measurements, anemia, and HIV testing were also conducted (ZDHS, 2012). Data were collected and analyzed by the Zimbabwe National Statistics Agency (ZIMSTAT).

The World Health Organization (WHO) defines maternal health as "the health of women during pregnancy, childbirth and the postpartum period" (WHO, 2014a). Maternal health is a critical indicator of national health and is directly related to newborn and child health because "babies and young children who have lost their mothers in childbirth are up to ten times more likely to die prematurely than their peers" (United Nations in Zimbabwe, 2013, p. 1). As a result, maternal health is an integral part of

Zimbabwe's national health strategy with the objective of achieving the previous Millennium Development Goal (MDG) 5 targets to: 1) reduce by three quarters, between 1990 and 2015, the maternal mortality ratio, and 2) achieve, by 2015, universal access to reproductive health (National Health Service, 2009; WHO, 2014e). According to the WHO, maternal mortality or maternal death is "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, 2014b). Globally, about 830 women of childbearing age die every day due to complications of pregnancy and child birth, while over 15 million suffer long term illness or disability (Bhutta, Dean, Imam, & Lassi, 2011; WHO, 2015b). An estimated 99% of all global maternal mortality occurs in developing countries, with sub-Saharan Africa alone accounting for 66% of these maternal deaths (WHO, 2015b). In addition, young women face higher risks of maternal mortality with pregnancy and childbirth complications being the leading cause of death among adolescent girls in developing countries (Conde-Agudelo, Belizán, & Lammers, 2005; Patton et al., 2009). Most maternal deaths occur during labor, delivery, and the immediate postpartum period (Bhutta et al., 2011). Obstetric hemorrhage is the main medical cause of maternal death with other causes being hypertensive diseases, sepsis/infections, obstructed labor, and abortion related complications (Bhutta et al., 2011).

Although global maternal mortality dropped by almost 44% between 1990 and 2015, Zimbabwe experienced an increase in maternal deaths within this time period (WHO, 2015b; ZDHS, 2012). The maternal mortality ratio in Zimbabwe increased from

555 deaths per 100,000 live births as documented in the 2005-06 ZDHS to an alarming 960 deaths per 100,000 live births in the latest 2010-11 ZDHS. This means that for every 1000 births, there were approximately 10 maternal deaths. The latest national maternal mortality data from the 2014 Multiple Indictor Cluster Survey outlined a maternal mortality ratio lower than the 2010-11 ZDHS at 581 deaths per 100,000 live births; however, this rate is still high (ZIMSTAT, 2015). Harare Province has the highest recorded rate of maternal mortality at 29% (Munjanja, 2009). The 2009-2013 Zimbabwe National Health Strategy addressed plans to reduce the maternal mortality ratio to 300 deaths per 100,000 births by 2015 (National Health Service, 2009); a daunting task considering the current status of maternal mortality in the country.

Maternal deaths in Zimbabwe are documented through the Maternal Death Notification System; however, this system does not capture maternal deaths outside the healthcare system from women who die giving birth at home or those who die after they are discharged from healthcare facilities (United Nations in Zimbabwe, 2013). As a result, the current statistics on maternal mortality may not be capturing the scope of maternal deaths in the country. The latest Zimbabwe Maternal and Perinatal Mortality Study (2007) identified HIV/AIDS, pregnancy induced hypertension/eclampsia, postpartum hemorrhage, puerperal sepsis, and malaria as the five leading causes of maternal mortality in Zimbabwe (Munjanja, 2009) (Table 2.1). The study identified that effectively preventing and treating the four leading causes of maternal deaths may potentially reduce maternal deaths by 73.5% (Munjanja, 2009).

The following is a description of the five leading causes of maternal mortality, accounting for over 80% of maternal deaths, as outlined in the 2006 Zimbabwe Maternal

and Perinatal Mortality Study. The descriptions will use percentage rates of maternal deaths based on the assessor's diagnosis to determine the rank and percentage of maternal deaths related to each health issue.

Table 2.1: Causes of Maternal Deaths in Zimbabwe Maternal and Perinatal Mortality Study 2006

Cause	Notification diagnosis	Percentage	Assessor's diagnosis	Percentage
HIV and AIDS related	87	29.7	94	26.9
PIH/Eclampsia	50	17.1	55	15.7
Postpartum haemorrhage	43	14.7	65	18.6
Puerperal sepsis	41	14.0	43	12.3
Malaria	23	7.9	26	7.4
Cardiac disease	16	5.5	16	4.6
Antepartum haemorrhage	9	3.1	15	4.3
Abortion related	5	1.7	9	2.6
Ruptured uterus	5	1.7	2	0.6
Diabetes mellitus	5	1.7	4	1.1
Obstructed labour	3	1.0	4	1.1
Anaesthetic complications	2	0.7	2	0.6
Suicide	2	0.7	2	0.6
Caesarean section related	1	0.3	1	0.3
Uknown	72	19.8	14	3.8
Total	364	100	364	100

Source: Zimbabwe Maternal and Perinatal Mortality Study (2007)

1. HIV and AIDS

The Zimbabwe Maternal and Perinatal Mortality Study (2007) found that HIV and AIDS were the leading causes of maternal mortality in Zimbabwe, accounting for 26.9% of maternal deaths (Munjanja, 2009). Other national data document the percentage of maternal deaths due to HIV at as much as 52.7% (MCHIP, 2013). Ciaranello and colleagues (2012) estimate a 16% HIV prevalence in antenatal care in Zimbabwe, with an estimated 61 000 children born to HIV-infected women each year (Ciaranello et al., 2012).

Women living with HIV/AIDS may be more susceptible to post-partum hemorrhage, puerperal sepsis, complications of caesarean section and opportunistic infections such as tuberculosis progress faster among pregnant women (McIntyre, 2003). The high impact of HIV and AIDS on Zimbabwe's maternal mortality mirrors the impacts of HIV and AIDS on the general population. In 2014, Zimbabwe had an adult HIV prevalence of 16.7% with 830,000 women aged 15 years and older living with HIV (UNAIDS, 2015). These decreasing HIV prevalence rates in addition to Zimbabwe's adoption of the WHO's 2013 guidelines to prevent mother to child transmission with Option B+, has seen increased access to HIV treatment among pregnant and non-pregnant women in Zimbabwe and will hopefully contribute to a decrease in maternal deaths related to HIV (WHO, 2013b)

2. Postpartum Hemorrhage

The WHO defines postpartum hemorrhage as "a blood loss of 500 ml or more within 24 hours after birth, while severe postpartum hemorrhage is defined as a blood loss of 1000 ml or more within the same timeframe" (WHO, 2012, p. 8). The most common causes of postpartum hemorrhage include uterine atony, genital tract trauma, uterine rupture, retained placental tissue, or maternal coagulation disorders (WHO, 2012). Women with grand multiparity, anemia and multiple gestations are at an increased risk of postpartum hemorrhage (WHO, 2012). The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified postpartum hemorrhage as the second leading cause of maternal mortality, accounting for 18.6% of all maternal deaths (Munjanja, 2009).

3. Pre-eclampsia and Eclampsia

The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified pregnancy-induced hypertension (PIH) or pre-eclampsia and eclampsia as the third leading causes of maternal mortality in Zimbabwe, accounting for 15.7% of all maternal deaths (Munjanja, 2009). Pre-eclampsia is characterized by a rapid rise in blood pressure that can lead to seizure, stroke, multiple organ failure and increased risk of fetal distress (Mudokwenuy-Rawdon, Bezuidenhout, & Ehlers, 2003; Pre-Eclampsia Foundation, 2013). If not managed correctly, pre-eclampsia progresses to eclampsia. Currently, efforts to reduce pre-eclampsia related maternal mortality center on treatment with magnesium sulphate, with no documented efforts to prevent this illness (Sevene et al., 2005). Key indicators of pre-eclampsia include blood pressure, weight, and proteinuria. High blood pressure defined as 140/90mmHg or greater at two occasions 6 hours apart, weight gain of more than .91kg (2 pounds) in a week, and a simple dipstick test of the urine with a measure of 1+ and greater all indicate a pre-eclampsia diagnosis (Pre-Eclampsia Foundation, 2013).

4. Puerperal Sepsis

The WHO defines puerperal sepsis as "any bacterial infection of the genital tract which occurs after the birth of a baby" with symptoms usually occurring more than 24 hours after delivery (WHO, 2008, p. 17). Symptoms include fever, chills and general malaise, lower abdominal pain, tender uterus, subinvolution of the uterus and purulent, foul-smelling lochia (WHO, 2008). Risk factors include pre-existing anemia and malnutrition, prolonged/obstructed labor, and caesarean section among others (WHO,

2008). The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified puerperal sepsis as the fourth leading cause of maternal mortality, accounting for 12.3% of all maternal deaths (Munjanja, 2009).

5. Malaria

Malaria is caused by a parasite that commonly infects a certain type of mosquito that feeds on humans (CDC, 2012). In Zimbabwe, 98% of all cases of malaria are caused by *P. falciparum* and the primary vector is *Anopheles arabiensis* (President's Malaria Initiative (PMI), 2014). Symptoms include high fevers, shaking chills, and flu-like illness (CDC, 2013). Malaria in pregnancy is a serious health threat to both the woman and her baby. The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified malaria as the fifth leading cause of maternal mortality, accounting for 7.4% of maternal deaths. Malaria is primarily transmitted during the rainy season, from November to April, and 50% of the Zimbabwe population is at risk of contracting malaria (Presidents Malaria Initiative (PMI), 2009).

Global recommendations for the prevention of malaria in pregnancy include the use of insecticide-treated bed nets, intermittent preventive treatment (IPTp) for women in high transmission areas, and effective case management (CDC, 2012). IPTp is the administration an antimalarial drug, usually sulfadoxine-pyrimethamine, beginning in the second trimester and at each subsequent antenatal care visit (CDC, 2012). According to the 2010-11 ZDHS, 10% of pregnant women reported that they had slept under an insecticide treated mosquito net (ITN) the previous night, while 7% of women reported receiving two or more doses of IPTp during their last pregnancy in the last two years.

The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified that the majority of maternal deaths (63%) occurred in the postpartum period, 24% in the antenatal period, and 6.6% in the intrapartum period. The majority of these deaths occurred at home (42.3%) and at tertiary hospitals (17.7%) (Munjanja, 2009). The study also found that the risk of maternal death increased significantly by delivering outside institutions, operative delivery, delivery by non-skilled persons and if the woman belonged to the Apostolic faith religious sect (Munjanja, 2009).

2.3 Factors that Contribute to Maternal Health in Zimbabwe

Factors that contribute to maternal health in Zimbabwe are mainly reproductive health and family planning, nutrition, antenatal care, obstetric care, and structural environmental influences. Below is a description of these factors.

1. Reproductive Health and Family Planning

The WHO defines reproductive health as "the reproductive processes, functions and system at all stages of life" (WHO, 2014c). In Zimbabwe, the average age of initial sexual activity is 18.9 years and 20.6 years for women and men respectively while the median age at first birth among women aged 25-49 years is 20.2 years (ZDHS, 2012). In addition, 24% of women aged 14-19 years have begun childbearing (ZDHS, 2012). The fertility rate in Zimbabwe has increased from 3.8 in 2006 to 4.1 in 2011, yet the total wanted fertility is 3.4 children per woman (ZDHS, 2012). Twenty-five percent of pregnancies are reported as mistimed (wanted later), and 7% are unwanted (ZDHS, 2012). In Zimbabwe, 9% of all children are born to mothers who are less than 24 months

postpartum, which is below the recommended WHO guidelines for birth spacing to reduce pregnancy risks (ZDHS, 2012).

Stover and Ross (2010) propose that family planning plays an integral role in reducing maternal mortality "by reducing the number of births and, thus, the number of times a woman is exposed to the risk of mortality" (p. 688). The type of contraception used is equally important in ensuring effective family planning. According to the 2009 Zimbabwe Multiple Indicator Monitoring Survey (MIMS), 98% of married women in Zimbabwe have knowledge of a modern family planning method (MIMS, 2009). Data from the 2010-11 ZDHS lists modern methods of contraception as the most common types of contraceptives used by married women aged 15-49 years with 58.5% of married women utilizing this method. Table 2.2 highlights the trends in current use of contraception as outlined in the 2010-11 ZDHS.

The most popular modern methods are the pill, used by 41.3% of married women, and injectables, used by 8.3% of married women (ZDHS, 2012). Despite the popularity of these modern methods, less than 1% of married women utilized intrauterine devices (IUDs) , diaphragms and the lactational amenorrhea method (LAM) irrespective of age, residence, region, education and number of living children (ZDHS, 2012). It is important to note that these low percentages were also evident in the 2005-06 survey showing a decrease or unchanged percentages among this population. Unmarried sexually active women are more likely to utilize modern family planning methods (62%) when compared to currently married women (57%) (ZDHS, 2012). It is also interesting to note that although 30% of sexually active unmarried women report their partners use male

condoms, only 3% of currently married women's partners utilize this method (ZDHS, 2012).

Table 2.2 Zimbabwe Trends in Current Use of Contraception

Zimbabwe Trends in Current Use of Contraception (%)						
ZDHS	**1984**	**1988**	**1994**	**1999**	**2005-06**	**2010-11**
All modern methods	38.4	43.1	48.1	53.5	60.2	58.5
Female sterilization	1.6	2.3	2.3	2.6	2.0	1.1
Male sterilization	0.1	0.2	0.2	0.1	0.1	0.0
Pill	22.6	31.0	33.1	35.5	43.0	41.3
IUD	0.7	1.1	1.0	0.9	0.3	0.2
Injectables	0.8	0.3	3.2	8.1	9.9	8.3
Implants	N/A	N/A	0.2	0.5	1.2	2.7
LAM	N/A	N/A	N/A	0.9	0.5	0.2
Other modern method	0.1	0.0	0.0	0.0	0.0	0.3

Source: ZDHS (2012)

In Zimbabwe, a reported 10.4% of married women who want to postpone their next birth for two or more years or who want to stop childbearing altogether are not using a contraceptive method (ZIMSTAT, 2015). The highest rates of unmet need for family planning in Zimbabwe are found among adolescents, older women, rural women with no education, and in the lowest income quintile (Loewenson, Kadungure, & Shamu, 2012).

A study conducted by the Zimbabwe National Family Planning Council (ZNFPC) identified deep cultural and religious resistance to contraception in addition to husband disapproval as the most influential factors of contraception use at the household level (Chitereka & Nduna, 2010). The researchers also found that knowledge levels of family planning methods did not translate to use and the monetary cost of contraceptives was not much of a hindrance to use of family planning methods when compared to the social and physical costs associated with contraceptives (Chitereka & Nduna, 2010).

Contraceptive Commodity Availability Patterns

The majority of Zimbabwean contraceptive users obtain their contraceptives from the public sector (73%) such as government hospitals/clinics, rural clinics/health centers, and ZNFPC clinics, while 14% obtain contraceptives from the private medical sector (ZDHS, 2012). The national committee that works on ensuring contraceptive security in Zimbabwe is the Reproductive Health Commodity Security Committee while the agency that advocates for contraceptive security is the Zimbabwe National Family Planning Counsil (ZNFPC). The ZNFPC is allocated a budget for family planning by the government with additional funding from partners (ZNFPC, 2010).

There are charges to the client in the public sector for family planning, but there are exemptions for those who cannot afford to pay. Contraceptives are generally in full supply at the central level with no significant issues with commodity security according to Contraceptive Security (CS) Indicators 2011 Data developed by USAID/DELIVER Project; however, information concerning the availability of contraceptives at health facility level is not readily available.

2. Nutrition

Micronutrient deficiencies are prevalent across the lifespan of Zimbabweans with serious health and social implications; particularly among women of childbearing age (15 to 49 years). The prevalence of iron deficiency among women is 61% and vitamin A deficiency is 22% while pregnant women, who have an increased nutritional need, have a higher prevalence of vitamin A deficiency (32%) and anemia (32.4%), which is associated with increased maternal and infant mortality (MOHCC, 2014; ZDHS, 2012).

Pregnant women receive IFA supplements at their first antenatal care visit and throughout pregnancy; however adherence to IFA supplementation among pregnant women is low with 49.8% of women reporting that they did not take iron supplements during their last pregnancy and 36.5% reporting that they took the iron supplements for less than 60 days (Gadaga et al., 2009; ZDHS, 2012).

Preliminary results of the aforementioned formative study assessing the influences on utilization of IFA supplementation among pregnant women in Harare, Zimbabwe points to delayed entry into antenatal care, misconceptions about IFA supplementation, influences of social networks, lack of supportive social environments for IFA supplementation, side effects and a lack of nutrition knowledge as possible reasons for low utilization of IFA supplementation, while possible enhancers of utilization of IFA supplementation included supportive social environments and social networks for IFA supplementation, knowledge of risks and benefits of IFA supplementation, fear of negative health complications, and healthcare provider recommendation.

Micronutrient deficiencies are a common risk factor for the four leading causes of maternal mortality in Zimbabwe (Munjanja, 2009; ZDHS, 2012). Specifically, maternal micronutrient deficiency may increase the progression of HIV, with vitamin A deficiency increasing the transmission of HIV from mother to child (McIntyre, 2003). Furthermore, iron deficiency is a risk factor for postpartum hemorrhage and puerperal sepsis, while calcium deficiency is a risk factor for pregnancy-induced hypertension/eclampsia (Pre-Eclampsia Foundation, 2013; WHO, 2012; WHO, 2008). As a result, preventing maternal micronutrient deficiencies may reduce the micronutrient risks associated with these

leading causes of maternal mortality.

Micronutrient deficiencies persist in developing countries like Zimbabwe due to high rates of food insecurity, lack of a national micronutrient fortification policy, low nutrition knowledge among women, lack of nutrition programming targeting non-pregnant women, low reach of micronutrient supplementation due to delayed entry into antenatal care, low utilization of antenatal care, and low adherence to IFA supplementation in pregnancy (City of Harare, 2012; Darnton-Hill, 2012; Gadaga et al., 2009; MOHCC, 2014; ZDHS, 2012).

3. Antenatal Care

Antenatal care is integral to improving health during pregnancy because it provides health education, identifies and reduces risks for maternal illnesses, and provides treatment and care throughout pregnancy to improve maternal and child health outcomes. Zimbabwe follows WHO recommendations for at least 4 antenatal care visits during pregnancy at 8-12 weeks, 24-26 weeks, 32 weeks and 36-38 weeks respectively (Lincetto, Mothebesoane-Anoh, Gomez, & Munjanja, 2006; ZDHS, 2012). The median months pregnant at first antenatal care visit among pregnant Zimbabwean women is 5.3 months (19 weeks) (ZDHS, 2011). The aforementioned study assessing the influences on utilization of IFA supplementation among pregnant women in Harare found similar results with participants reporting that they attended their initial antenatal care visit at, on average, 6 months pregnant (unpublished data). This means that most pregnant women are not benefitting from these antenatal care services, particularly in terms of micronutrient supplementation and the management of illnesses in pregnancy.

Observations of antenatal care sessions at the study clinics revealed that the initial antenatal care visit was termed a "booking" and subsequent antenatal care visits were termed "scale". Pregnant women paid $25 for antenatal care services at their initial antenatal care visit and this covered their antenatal care and general healthcare during pregnancy and six weeks post-delivery. Each pregnant woman received a maternity book where healthcare providers documented their medical and maternal history and this book was used to track the health and health conditions of each pregnant woman throughout pregnancy. Antenatal care sessions were group sessions with on average between 20-40 pregnant women at each initial visit and between 30-70 pregnant women at each repeat visit.

Trained cadres that provided antenatal care counseling to pregnant women at the study clinics were nurses, nurse/midwives, and midwives; however, HIV councilors were also at hand to provide health education about HIV prevention, and prevention of mother-to-child transmission of HIV/AIDS (PMTCT). This is comparable, with the exception of doctors, to national-level data that states that nurses are the primary healthcare workers providing antenatal care services to pregnant women in Zimbabwe with 59.3% of pregnant women reporting receiving antenatal care services from nurses, 10.0% from doctors, and 20.5% from nurse-midwives (ZDHS, 2012).

The group antenatal care sessions were long and pregnant women arrived early in the morning between 6am-7am and left later on in the afternoon between 2pm-3pm. Initial antenatal care sessions covered various topics such as HIV education and counseling, IFA supplementation, and expectations for clinic delivery. Repeat visits covered most of the same topics as the initial visit with follow-up on results for medical

tests that were taken during the initial visit. These sessions usually took between 2-4 hours and at one of the study clinics, repeat visits were only conducted one day during the week, while the other clinic had repeat visits four days out of the week.

Although most of the pregnant women in the study attended their initial antenatal care visit later on in their pregnancy (on average at 6 months pregnant) it was very possible for them to have attended at least four antenatal care visits at the time of delivery because the majority of the pregnant women in the study attended an antenatal care visit every 2 weeks or monthly following their initial antenatal care visit up until delivery. In Zimbabwe, 64.8% of pregnant women attend at least four of the WHO recommended antenatal care visits and the 2010-11 ZDHS found that of the women who reported attending at least 4 antenatal care visits, 73.6% also reported delivering their child in a health facility (ZDHS, 2012).

4. Obstetric Care

According to the WHO, Essential Obstetric and Newborn Care (EmONC) is defined for two different levels of the health care system: 1) Basic Essential Obstetric and Newborn Care (BEmONC) services at the health center level which include parenteral antibiotics, parenteral oxytocic drugs, parenteral sedatives for eclampsia, manual removal of placenta, and manual removal of retained products, and 2) Comprehensive Essential Obstetric and Newborn Care (EmONC) services at the district hospital level (first referral level) which include surgery, anesthesia, and blood transfusion (WHO, 2015a). The Zimbabwe Maternal and Perinatal Mortality Study (2007) identified that effectively preventing and treating the three leading causes of obstetric deaths, hemorrhage,

hypertension/eclampsia and sepsis, may potentially reduce maternal deaths by 46% (Munjanja, 2009). As such, the health care system plays a critical role in preventing maternal mortality in Zimbabwe.

Efforts are currently underway in Zimbabwe through funding from the Health Transition Fund (described in depth later in the background section) to provide health care workers such as doctors, midwives, nurses and primary care nurses from provincial, district and rural health facilities with training on the five signal functions of BEmONC. The Ministry of Health and Child Care of Zimbabwe has a database that tracks the number of healthcare workers trained in providing these obstetric care services (UNICEF Zimbabwe, 2014). In 2012, 100% of health facilities had at least one health worker trained in EmONC and midwifery lifesaving skills, 65% of health facilities were capable of providing three BEmONC signal functions namely; parenteral antibiotics, anticonvulsants, uterotonics and over 70% were able to provide neonatal resuscitation (UNICEF Zimbabwe, 2014). Despite these successes, there are still gaps in basic and comprehensive EmONC service provision at health facilities. These gaps include essential equipment and supply shortages, particularly in rural clinics (UNICEF Zimbabwe, 2014). Funding from the Health Transition Fund has been allocated to strengthen EmONC in Zimbabwe and mitigate the aforementioned resource gaps.

5. Structural Environmental Factors

Structural environmental influences on maternal health are those changeable environmental factors that influence health behavior and that change conditions beyond individual control such as the physical and social environment (Cohen, Scribner, &

Farley, 2000). Physical environmental influences include availability or accessibility to health resources or physical structures that inherently reduce or increase opportunities for healthy behaviors and outcomes (Cohen et al., 2000). Social environmental influences include social structures such as laws or policies that promote or prohibit behaviors or cultural and media messages that are viewed regularly (Cohen et al., 2000).

Over the past decade, Zimbabwe's healthcare system has faced challenges with a shortage of trained healthcare professionals and the high cost of healthcare services (UNICEF, 2011). Initially, the Zimbabwean health sector faces challenges with a shortage of trained healthcare professionals such as doctors, nurses, pharmacists and specialists, particularly in the public sector which provides as much as 65% of the country's health services (McPake et al., 2013; Mudyarabikwa & Mbengwa, 2006). The shortage of trained healthcare professionals is due to migration, retention, lack of incentives, poor salaries and conditions of services (Mudyarabikwa & Mbengwa, 2006). To mitigate this issue, the Zimbabwean government introduced a new cadre of healthcare professional called a primary care nurse with the sole responsibility of providing healthcare services at the primary health care level (National Health Service, 2009).

In addition, the issue of cost is a challenge facing the Zimbabwean healthcare system. In 2011, it is estimated that pregnant women paid between US$3 and US$50 to deliver in a government or municipal facility, in addition to transportation costs to the health facility (UNICEF, 2011). Results of the 2010-11 ZDHS found that women aged 15-49 years identified cost and distance from health facility as key barriers to accessing healthcare services. Specifically, 36.8% and 58.6% of urban and rural women respectively identified cost as a barrier and 10.5% and 49.1% of urban and rural women

respectively identified distance to health facility as a barrier to accessing healthcare services (ZDHS, 2012). These percentages highlight the disparities in access to maternal and general health services among women in urban and rural areas, with women in rural areas being disproportionately affected by the aforementioned barriers.

The Access to Health Care Services Study (2008) found that 23% of communities in Zimbabwe live between 5 to 10 km and 17% are live over 10km from their nearest health center (Makuto & James, 2007). The cost and distance barriers, in addition to the limited availability of ambulance services for emergencies, have attributed to home deliveries with on average 33% of women delivering their children at home (Loewenson et al., 2012; ZDHS, 2012). This disparity widens between women in urban and rural areas with 14.2% and 41.6% of women in urban and rural areas respectively delivering at home (ZDHS, 2012).

In 2011, the Ministry of Health and Child Care, with aid from international donors, established the Health Transition Fund to strengthen health systems and aid in removing healthcare user fees for pregnant women and children under 5 years attending non-private health facilities (UNICEF, 2011). Currently, Zimbabwe's policy is to provide free maternal services to pregnant women through the Health Transition Fund with the hopes of improving maternal and child health on the road to meeting the previous health-related Millennium Development Goals and the current Sustainable Development Goals (UNICEF, 2011; United Nations, 2016). However, due to economic instability in the country, pregnant women continue to pay fees for maternal services in some non-private health facilities and even when women are not charged at the point of care, they may

incur costs related to travel to and from the health facility and loss of work time among others.

A focus on cost of maternal healthcare services is critical; however, Loewenson and colleagues (2012) propose that simply tackling the issue of cost of accessing healthcare services will not address the social differentials, which include religion and culture among others, that exist in maternal health. To support their argument, Loewenson and colleagues (2012) conducted a study to assess the facilitators and barriers (perceived and measured) to accessing maternal, neonatal and child health services in women and in children under five years in Zimbabwe. The researchers interviewed both key informants and mothers from four urban and rural districts and identified the absence of a waiting mother shelter, availability of supplies, cost, transport and distance to services, culture, religion and stigma in elderly and young people, and lack of access to information as the major barriers to maternal health service uptake and coverage (Loewenson et al., 2012).

The researchers' findings through both qualitative and quantitative methodologies provided an extension of the cost and distance barriers to more socio-cultural factors that impact access to maternal health services in Zimbabwe. Specifically, taking into account how culture plays a role in establishing the social norms concerning pregnancy in Zimbabwe. A study conducted by Murira and colleagues (2003) determined that culture played an integral role in pregnant women's beliefs and behaviors about pregnancy practices with information being passed down from mothers to daughters (Murira, Lützen, Lindmark, & Christensson, 2003). For example, women are encouraged not to eat certain foods during pregnancy to avoid adverse effects during delivery and certain

rituals are performed to improve labor and delivery (Murira et al., 2003). Therefore, addressing cultural factors may lead to the effectiveness of maternal health programs in this context.

2.4 National Strategy and Interventions to Promote Maternal Health in Zimbabwe

The National Health Strategy 2009-2013 outlines a goal of reducing Zimbabwe's maternal mortality ratio to 300 deaths per 100,000 live births by 2015 through the following 6 objectives:

1. Increase the availability and utilization of youth friendly Family Planning and HIV prevention services.
2. Increase the availability and utilization of quality focused antenatal care including prevention of mother to child transmission of HIV/AIDS (PMTCT) services.
3. Improve access to skilled attendance at delivery; including EmONC.
4. Improve access to quality prenatal care including PMTCT services.
5. Strengthen the capacity of the health system for the planning and management of maternal and newborn health programs.
6. Improve the policy environment for provision and utilization of quality and equitable maternal and newborn health services. (National Health Service, 2009, p. 45)

With these clearly outlined goals in mind, a series of interventions and approaches are currently being implemented by governmental and non-governmental organizations in Zimbabwe to improve maternal health and reduce maternal mortality.

Interventions to promote maternal health in Zimbabwe focus on the pregnancy period with PMTCT, antenatal care, micronutrient supplementation in pregnancy, obstetric care, and malaria in pregnancy prevention. Currently, Zimbabwe has a strong PMTCT program which provides pregnant women with provider initiated testing and counseling for HIV (PITC), in addition to access to antiretroviral treatment (ART) treatment (AVERT, 2013). In 2013, 82% of HIV-positive pregnant women received ART for PMTCT with national reductions in mother to child transmission of HIV from 21% in 2009 to 6.6% in 2014 (UNAIDS, 2015).

Antenatal care is an integral intervention that is currently being implemented in Zimbabwe to improve maternal health. Pregnant women receive health education, testing and treatment, in addition to micronutrient supplementation during pregnancy with the goal of ensuring meeting WHO recommendations that all women have access to antenatal care during pregnancy, skilled care during childbirth and the postpartum period in order to prevent maternal deaths (WHO, 2014b). Obstetric care is another important intervention being implemented to improve maternal health in Zimbabwe with the training of healthcare workers to provide obstetric care services in health facilities across the country (UNICEF Zimbabwe, 2014). Prevention of malaria in pregnancy efforts through ITNs and IPTp are also currently underway to increase utilization and access to these commodities through various national and international agencies and donors (Presidents Malaria Initiative (PMI), 2009).

2.5 A New Approach for Improving Maternal Health in Zimbabwe: Pre-Pregnancy Health

Efforts to address maternal health in Zimbabwe have focused on the time during pregnancy with an emphasis on PMTCT, antenatal care, micronutrient supplementation in pregnancy, obstetric care, and prevention of malaria in pregnancy. Although important, these approaches often neglect the critical phase before pregnancy. Pre-pregnancy health is considered an important component of maternal newborn and child health promotion and is defined as "the provision of biomedical and behavioral interventions prior to conception in order to optimize women's wellness and subsequent pregnancy outcomes" (Boulet, Parker, & Atrash, 2006, p. S29) and includes the interconception period which is the period between pregnancies (WHO, 2013a). Pre-pregnancy health emphasizes that early prenatal care may already be too late and as such, we need to intervene before a woman contemplates or becomes pregnant (Atrash et al., 2006). The following is an overview of the critical elements that contribute to pre-pregnancy health with a focus on pre-pregnancy care, pre-pregnancy planning, and pre-pregnancy interventions. A justification for intervening among adolescents is also presented.

1. Pre-pregnancy Care

Pre-pregnancy care is defined across the literature as "a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management" (Johnson et al., 2006) or ''any intervention provided to women and couples of childbearing age, regardless of pregnancy status or desire, before pregnancy, to improve health outcomes for women,

newborns and children'' (Dean, Lassi, Imam, & Bhutta, 2014, p. 10). Pre-pregnancy care acknowledges the importance of healthcare before pregnancy for improving maternal, newborn and child health outcomes and evidence pointing to earlier care before pregnancy has been emphasized (Bhutta et al., 2011; Jack & Culpepper, 1990; Johnson et al., 2006; Whitworth & Dowswell, 2009). Although the terms "preconception care" and "pre-pregnancy care" are often used interchangeably across the literature, the term "pre-pregnancy care" was chosen by the WHO as a simpler term which could be understood across contexts (WHO, 2013a).

Currently Zimbabwe, much like all other countries, has no national policy, nor do standard tools exist, for the delivery of pre-pregnancy care services. Developed countries such as Canada, the United States, Spain, and the United Kingdom tend to have better access to and quality of healthcare systems and as such provide pre-pregnancy care services within the healthcare sector that address various health topics related to specific health conditions such as diabetes and heart disease, lifestyle modifications such as smoking cessation and reduction in alcohol consumption, and nutrition, among others (Boulet et al., 2006). In developing countries, many women of childbearing age, particularly young women, do not have access to pre-pregnancy care and the need to increase the reach of cost-effective pre-pregnancy interventions in these settings has been emphasized (Dean et al., 2013; Draper et al., 2014). Within countries such as Ecuador, Peru and Nicaragua that do provide pre-pregnancy care through grants from donor agencies, these pre-pregnancy health messages are often delivered at the community level through community programs (Dean et al., 2013).

2. Pre-pregnancy Planning

Although pre-pregnancy planning is not consistently defined across the literature, the purpose of pre-pregnancy planning is to modify or sustain positive health and health behaviors before pregnancy at the individual level in order to improve maternal and child health outcomes. Pre-pregnancy planning could include receiving health education on preventing certain illnesses such as HIV and gestational diabetes, modifying diet or taking micronutrients to improve nutrition status, using contraceptive methods to prevent unplanned pregnancy or to ensure adequate spacing of pregnancies, or seeking healthcare services to screen for, prevent or treat illness before pregnancy.

Researchers need to have a fundamental understanding about how young women of childbearing age conceptualize pregnancy and planning for pregnancy before we can effectively inform the development of pre-pregnancy planning interventions (Monterrosa et al., 2012). The following is a description of current conceptualizations of pregnancy and planning for pregnancy among women of childbearing age, perceptions of pre-pregnancy planning among women, healthcare providers and researchers, and social environmental influences on pre-pregnancy planning as outlined in the literature.

Current Conceptualizations of Pregnancy and Planning for Pregnancy

The literature on women of childbearing age's conceptualizations of pregnancy and planning for pregnancy is limited among developed and developing contexts alike. Information on conceptualizations of pregnancy and planning for pregnancy can often be gleaned from results of studies assessing other perspectives such as a study conducted in Harare, Zimbabwe which explored women's and health workers' perspectives of sexuality

and sexual violence in pregnancy which found that participants perceived that women had less decision making power than their partners in terms of their reproductive health and timing of pregnancy; factors which may impact their ability to plan for pregnancy (Shamu, Abrahams, Temmerman, Shefer, & Zarowsky, 2012).

Some researchers have provided insights into how pregnancy is conceptualized in Zimbabwean culture. Pregnancy is positively viewed in the confines of marriage and is viewed as a cultural symbol of maturity for both husband and wife (Murira et al., 2003). Mutambirwa (1984) addresses how conception, pregnancy, and labor are matters not readily and openly discussed outside the family. Murira and colleagues (2003) propose that pregnancy is viewed by many Zimbabwean men as a "woman's issue" and despite men mostly controlling the women's fertility by deciding the number of children in a family, many men are not active participants in pregnancy care.

Perceptions about pre-pregnancy planning have been assessed among women of childbearing age and healthcare providers mostly in developed countries; however, to my knowledge, no such studies have been conducted in Zimbabwe. Among women of childbearing age, a study conducted by Frey and Files (2006) in the United States assessed women's perceptions of pre-pregnancy planning, their knowledge level and beliefs about pre-pregnancy healthcare, and preferred information avenues for receiving pre-pregnancy health information. The researchers found that almost all the women in the study realized the importance of pre-pregnancy care and receiving pre-pregnancy health information before pregnancy and preferred receiving pre-pregnancy health information from their physician; however only about a third of the participants had ever discussed this topic with their physician (Frey & Files, 2006). Another qualitative study conducted

with low-income African American and White women in the eastern Unites States by Borrero and colleagues (2015) found that participants viewed pre-pregnancy planning as an unattainable ideal because they did not always perceive that they had reproductive control because of coercion from partners. In addition, financial stability and marital unions were identified as optimal for pre-pregnancy planning.

Among healthcare providers, Stephenson and colleagues (2014) interviewed 20 health professionals in London to assess their knowledge and perceptions of pre-pregnancy care and the results highlighted low awareness of preconception health issues, missed opportunities and confusion about responsibility for delivery of preconception care. Among researchers, although the majority of literature concerning pre-pregnancy health leans favorably towards the need and positive effects of intervening in the pre-pregnancy phase, there are emerging critics of this concept. Specifically, in the United States critics argue that the pre-pregnancy health and health care paradigm imposes the idea that women should be mothers and therefore, associates women's health with maternal health (Waggoner, 2013). Waggoner (2013) and researchers describe this as "maternalism" or "defining women's needs in terms of maternal needs" (p. 2) and proposes that this presents challenges to how we view women's roles in society.

It is important to note that the aforementioned views are heavily influenced and stem from a western perspective and have not been viewed through varying cultural lenses; particularly a culture like Zimbabwe that values childbearing. In framing our proposed research, we are aware of these opposing views and we realize that a woman's health is not simply equated with her reproductive or maternal health. Pre-pregnancy health is just a component of a woman's health across the lifespan and it is our hope that

by intervening early, during the pre-pregnancy phase, in addition to creating environments conducive to pre-pregnancy health, women will have access to information and resources to make an informed and non-coerced decision about their health and health behaviors.

Structural Environment Influences on Pre-pregnancy Planning

The structural environmental influences on pre-pregnancy planning have not been well documented in the literature. In Zimbabwe, possible structural influences on pre-pregnancy planning could include poverty, gender-based violence, and cultural views surrounding pregnancy and planning for pregnancy. Young women of childbearing age, much like the majority of the Zimbabwe population, face socioeconomic barriers such as lack of employment, early school dropout, and limited access to health and social services (National Health Service, 2009). Unemployment rates for the general population are as high as 80%, pushing many into poverty (National Health Service, 2009). Gender-based violence against women in the form of domestic violence, sexual coercion and rape is also common and is strongly linked to cultural beliefs and messages about men and women's status in society.

Zimbabwean culture is patriarchal whereby males dominate socio-political and family life (Kambarami, 2006). Children are socialized into these patriarchical practices at a young age and thus gender inequality is shaped and perpetuated across the life course. Kambarami (2006) proposes that patriarchy in Zimbabwe leads to the control of female sexuality by males. Although Zimbabwean culture values childbearing, particularly in rural areas where large families are beneficial for farming practices, the

timing of childbearing is important. If an adolescent female becomes pregnant while attending school, she is often expelled and more than likely, will not finish the remainder of her education. This results in lower education attainment and decreased employment opportunities. More research is needed to identify specifically how and whether these structural environmental factors influence pre-pregnancy planning in Zimbabwe.

3. Pre-pregnancy Interventions: Adolescence as a Critical Phase for Pre-pregnancy Care and Planning

Dean and colleagues (2011) conducted a systematic review of pre-pregnancy risks and interventions, and identified recent research establishing linkages of pre-pregnancy interventions with improved maternal, perinatal and neonatal health outcomes. The researchers separated the period before pregnancy into 1) a proximal period which is the period immediately preceding pregnancy (up to 2 years prior to conception), and 2) a distal period which is the period during adolescence or in general a longer time before pregnancy (Dean et al., 2011). Dean and colleagues (2011) emphasize that pre-pregnancy interventions should begin in adolescence with distal interventions and progress throughout a woman's reproductive years with proximal interventions.

Adolescence is considered a critical phase for pre-pregnancy care and intervention because according to Dean et al. (2012) this is when future patterns of adult health are established (Dean et al., 2013; Sawyer et al., 2012; Viner et al., 2012). Viner and colleagues (2012) propose that because transitions such as puberty and rapid brain maturation result in new behaviors and capacities, these transitions modify childhood trajectories towards health and wellbeing (Sawyer et al., 2012). The literature also

highlights that maternal risk factors are often established in adolescence (Bhutta et al., 2011). For example, malnutrition in young girls can lead to stunting in adolescence and adulthood which in turn is a risk factor for maternal and child mortality (Bhutta et al., 2011). As a result, adolescence presents an opportunity to intervene to positively impact health trajectories into adulthood (Dean et al., 2013; Viner et al., 2012). According to the 2010-11 ZDHS 24% of adolescent females aged 15-19 have begun childbearing with the proportion of adolescents who have had a live birth rising rapidly with age, from 3% at age 15 years to 41% at age 19 years. Rural adolescents have almost double the rates of pregnancy at 23% when compared to urban adolescents (12.3%) and those with less education, and those in the lowest wealth quintile tend to start childbearing earlier than other adolescents. Globally, pregnancy and childbirth complications are a leading cause of death among adolescent girls, particularly in developing countries (Conde-Agudelo et al., 2005; Patton et al., 2009).

An example of a comprehensive pre-pregnancy care package in developing countries covers topics such as "(1) risk assessment (identify individual, family, and social risks and barriers to prenatal care); (2) health promotion (ensure proper nutrition; avoid substance, tobacco, and alcohol use; provide family planning; perform PAP smear screening, and provide ongoing care); and (3) treatment delivery (treat medical conditions and infections such as malaria and sexually transmitted diseases, update immunizations, provide nutritional supplementation such as folic acid, and conduct home visits)." (Boulet et al., 2006, p. S32). Additional recommendations for pre-pregnancy interventions include having a health literacy component to increase access to health information and the capacity to use this information (Hanson et al., 2012), applying a systems-based

approach to expand the demand for and uptake of pre-pregnancy interventions (Dean et al., 2013).

A review of pre-pregnancy counseling, family planning, and nutrition interventions is described below; focusing on intervention targets that are pertinent to the Zimbabwe context based on epidemiologic data and proposed need for intervention as described in the literature. Data sources include the aforementioned systematic review conducted by Dean and colleagues (2011) and additional peer reviewed studies.

Pre-pregnancy Counseling Interventions

Dean and colleagues (2011) found that few studies implemented "holistic" pre-pregnancy care and counseling. In addition, trained healthcare providers mostly carried out interventions in healthcare facilities one year before conception or in the community by trained facilitators and women's groups. Overall, the researchers found that women who receive pre-pregnancy counseling are more likely to reduce risk behaviors. Specifically, the researchers found that education before pregnancy about pregnancy and childbirth for women's groups increased the chances of women accessing antenatal care by 39% and women were 20% more likely to breast feed; however no interventions reported reductions in maternal mortality or still birth.

Family Planning Pre-pregnancy Interventions

Prevention of adolescent pregnancy and birth spacing at least 18-24 months before the next pregnancy were the main focus of family planning centered pre-pregnancy planning interventions reviewed by Dean and colleagues (2011). Pregnant

adolescents have an increased risk of stillbirth and antenatal death and thus pre-pregnancy interventions targeting adolescents focused on preventing pregnancy. Interventions that only targeted individual contraception use or only provided expanded sexual education had no effect on preventing adolescent pregnancy (Dean et al., 2011). Some promising interventions to prevent adolescent pregnancy target multiple factors such as communities, schools, health services, contraception distribution, and social and personal development. Family planning pre-pregnancy interventions that focus on birth spacing promote the use of contraception during the postpartum period to ensure that subsequent pregnancies are spaced as recommended to prevent adverse outcomes associated with short intervals such as uterine rupture during labor, stillbirths, and maternal death (Dean et al., 2011). Additional effective interventions to promote advised birth spacing include education on contraception use during the postpartum period and exclusive breastfeeding (Dean et al., 2011).

Pre-pregnancy Nutrition Interventions

The importance of pre-pregnancy nutrition is well documented in the literature (Korenbrot et al., 2002). In the 2013 Lancet Series, Bhutta and colleagues (2013) identified a range of interventions during the pre-pregnancy phase with positive outcomes on maternal, newborn, and child health and nutrition outcomes. For example, periconceptional (before and in early pregnancy) folic acid supplementation resulted in 72% reduction in risk of development of neural tube defects compared to control groups (Bhutta et al., 2013). As such, the pre-pregnancy phase is a critical window for improving maternal, newborn, and child health and nutrition outcomes.

Dean and colleagues (2011) systematically reviewed pre-pregnancy nutrition interventions that targeted nutrition topics such as nutrition intake, micronutrients such as iron and folic acid, vitamin A, vitamin D and calcium, and maternal nutrition among others. Women who were overweight before pregnancy had an increased risk for hypertensive disorders of pregnancy, pre-eclampsia and gestational diabetes mellitus, while women who were underweight before pregnancy had an increased risk of preterm birth, and delivering small for gestational age babies (Dean et al., 2011). According to Bhutta and colleagues (2011), interventions that address pre-pregnancy weight are limited and thus we cannot sufficiently demonstrate the effectiveness of such interventions and more evidence is needed; particularly for women who are underweight.

2.6 Gaps in the Literature

The literature on women's conceptualizations of pregnancy and planning for pregnancy in Zimbabwe is limited. Additionally, little is known about the structural environmental influences and adolescent girls and young women's perceptions of pregnancy and planning for pregnancy in Zimbabwe. Furthermore, little is known about how pre-pregnancy planning interventions can be effectively implemented among women in developing countries like Zimbabwe and to my knowledge, no such interventions exist in Zimbabwe. The evidence that is currently outlined in the literature makes a persuasive rationale for intervening during the pre-pregnancy phase, particularly among adolescent girls and young women, with intended positive impacts on maternal and child health. Our research sought to address these gaps in the literature and present an innovative approach to contribute to improving maternal and child health outcomes in Zimbabwe.

2.7 Study Significance

The dissertation research is significant because of the high maternal mortality in Zimbabwe, the potential to bridge the knowledge gap around pre-pregnancy planning in Zimbabwe, the targeting of adolescent girls and young women (14-24 years), the exploration of structural environmental influences on pregnancy and pre-pregnancy planning, and the shift from treatment to prevention in maternal health efforts. Zimbabwe's maternal mortality ratio is high at 581 deaths per 100,000 live births, with the capital city, Harare, having the highest recorded rate of maternal mortality at 29% (Munjanja, 2009; ZIMSTAT, 2015). As a result, the research addressed a critical public health problem.

Many adolescent girls and young women in developing countries like Zimbabwe do not have access to pre-pregnancy care, and little is known about how pre-pregnancy planning interventions can be implemented among women in these countries (Dean et al., 2013; Draper et al., 2014).The research presented an opportunity to obtain an understanding of the conceptualizations and structural environment for improving pre-pregnancy planning for adolescent girls and young women in Zimbabwe, in addition to providing information for the development of a pre-pregnancy planning intervention to contribute to improving overall maternal and child health.

Young people are often defined as individuals aged 10-24 years and include adolescents aged 10-19 years and youth aged 15-24 years (WHO, 2014d). The research targeted adolescent girls and young women (14-24 years) because the median age at first birth in Zimbabwe occurs during youth at 20.2 years and maternal risk factors are often

established in the early stages of childbearing age (Bhutta et al., 2011; ZDHS, 2012). For example, malnutrition in young girls can lead to stunting in adolescence and adulthood which in turn is a risk factor for maternal and child mortality (Bhutta et al., 2011).

The research also addressed key structural environmental factors that can facilitate or hinder maternal health efforts, taking into account how culture plays a role in establishing the social norms concerning pregnancy in Zimbabwe. A study conducted by Murira and colleagues (2003) determined that culture played an integral role in pregnant women's beliefs and behaviors about pregnancy practices with information being passed down from mothers to daughters. Addressing these cultural factors may lead to the effectiveness of maternal health programs in this context.

Currently, interventions to reduce maternal mortality in Zimbabwe focus on the pregnancy period with an emphasis on antenatal care, micronutrient supplementation during pregnancy, and obstetric care. Although important, these intervention efforts are not reaching a large number of women due to delayed or non-uptake of antenatal care, home deliveries, low adherence to micronutrient supplementation in pregnancy, and structural challenges within the healthcare system such as staff shortages (City of Harare, 2012; Darnton-Hill, 2012; Gadaga et al., 2009; MOHCC, 2014; Munjanja, 2009; ZDHS, 2012). As such, the dissertation research explored ways to intervene during the pre-pregnancy phase to improve overall maternal and child health outcomes.

CHAPTER 3

METHODOLOGY

This chapter will describe the overall research methodology beginning with an overview of the research design, the conceptual model that guided the research, and the research setting, sampling, recruitment, procedure and data collection and analysis.

3.1 Overview of Research Design

The overall goal of the dissertation research was to explore pre-pregnancy planning among adolescent girls and young women (14-24 years) in Harare, Zimbabwe. In order to achieve this goal, a 15 month study was implemented, working collaboratively with adolescent girls and young women (14-24 years) and key community stakeholders to document conceptualizations and social environment for improving pre-pregnancy planning for adolescent girls and young women (14-24 years) in Harare, Zimbabwe. The research study also identified specific health conditions or behaviors that could be addressed through a pre-pregnancy planning intervention, the preferred methods for delivering the intervention, in addition to best practices for pre-pregnancy planning targeting adolescent girls and young women (14-24 years) in Harare, Zimbabwe.

The dissertation research was a qualitative study in Harare, Zimbabwe that addressed three specific aims. **Specific Aim 1** took an emic approach (Pelto & Pelto, 1978) to understand and describe how adolescent girls and young women (14-24 years) in Harare conceptualize pregnancy and planning for pregnancy, and how the aforementioned

conceptualizations inform decisions about pregnancy and planning for pregnancy.

Specific Aim 2 was to understand and describe the structural environment related to pregnancy and planning for pregnancy in Harare, Zimbabwe and its influences on pregnancy-related decisions and practices from the perspectives of key community stakeholders. **Specific Aim 3** was to work collaboratively with adolescent girls and young women (14-24 years) with or without a previous or current pregnancy, healthcare workers, and partners of adolescent girls and young women to: 1) develop intervention protocol guidelines for a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe; 2) identify essential components of the intervention; 3) identify who, where, and when to potentially implement the intervention; and 4) identify potential channels for delivery of the intervention.

This research utilized an emic approach because Schweizer (1998) emphasized that change agents need to have a fundamental understanding about the target group's knowledge, attitudes, beliefs, values, and cognitive systems before designing interventions or efforts to address health issues. Emic approaches that preserve participant perspectives through qualitative methods are one of the most appropriate approaches to garner these understandings (Monterrosa et al., 2012; Pelto & Pelto, 1978). Helfrich (1999) describes these emic approaches as views of phenomena through the eyes of participants and posits that within this approach, culture is an integral component of human behavior. These emic approaches have been applied effectively to, for example, explain maternal behavior and understandings to inform the development of effective behavior change interventions by assessing maternal conceptualizations of child feeding practices in Mexico (Monterrosa et al., 2012).

3.2 Study Setting

Zimbabwe is located in southern Africa, and has a population of 12,973,808 (48.1% males; 51.9% females) (ZIMSTAT, 2013). The research was conducted in the capital city Harare, where residents make up 16.2% of the total population (ZIMSTAT, 2013), specifically in Mabvuku and Kuwadzana, which are two high-density communities in Harare. High-density communities are residential areas that are characterized by high population densities with residents having similar low-socioeconomic status. Mabvuku has a population of 47,154 and is located in the eastern part of the city while Kuwadzana has a population of 171,911 and is located in the western part of Harare (City of Harare, 2014). English is the official language of Zimbabwe and Shona is the predominant local language among Harare residents. Harare has the highest recorded rate of maternal mortality with 29% of the national maternal deaths (Munjanja, 2009).

3.3 Conceptual Model

The conceptual model guiding the research (Figure 3.1) was developed based on constructs adapted from several conceptual frameworks including the PEN-3 Model, Social Ecological Model, Theory of Planned Behavior, Social Cognitive Theory, and the Information-Motivation-Behavioral (IMB) Skills Model. Below is an overview of each of theoretical frameworks followed by a description of the overall conceptual model that guided the research.

PEN-3 Model: The *PEN-3 Model* was developed by Airhihenbuwa to emphasize the impact of culture in addressing health issues in a global context (Airhihenbuwa, 2010; Airhihenbuwa & Webster, 2004). The model locates problems within contexts, as opposed to individuals, that hinder or promote health (Airhihenbuwa, 2010; Airhihenbuwa & Webster, 2004). The model highlights the interaction between cultural empowerment, relationships & expectations, and cultural identity, which are the three primary constructs of the model (Airhihenbuwa, 2010). Community involvement is central to the PEN-3 model, with involvement of community members in all phases of intervention (Airhihenbuwa, 2010; Airhihenbuwa & Webster, 2004). Culture, relationships and expectations, and community involvement contributed to the overall conceptual model that guided the research.

Social Ecological Model: The *Social Ecological Model* acknowledges that programs can target behavioral and/or environmental factors, and that determinants of health are both personal and environmental (McLeroy, Bibeau, Steckler, & Glanz, 1988). Environmental factors include individual or intrapersonal, interpersonal, institutional, community, and policy factors. Individual, interpersonal, institutional, and community factors contributed to the overall conceptual model that guided the research.

Theory of Planned Behavior: The *Theory of Planned Behavior* was developed by Ajzen and proposes that behavioral intention in a key indicator of a person's behavior and this intention is determined by a person's attitude toward the behavior and a person's

subjective norm (Ajzen, 1991). Perceived behavioral control, behavioral intention, and subjective norms contributed to the overall conceptual model that guided the research.

Social Cognitive Theory: *The Social Cognitive Theory* was developed by Bandura and emphasizes the constant interaction between personal, behavioral, and environmental factors (Bandura, 1982). A core psychosocial construct within this theory is self-efficacy which is defined as "judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122). Self-efficacy is a predictor of adopting and maintaining health behaviors. As such, self-efficacy contributed to the overall conceptual model that guided the research.

Information-Motivation-Behavioral (IMB) Skills Model: The *Information-Motivation-Behavioral (IMB) Skills Model* was developed by Fisher and Fisher and addresses the role of social influence and motivation on behavior change (Fisher & Fisher, 1992, 2002). The model identifies information, motivation and behavioral skills as fundamental determinant of positive behavior change. Although mainly applied among younger populations in HIV prevention, this model has been applied with other health behaviors such as reproductive health. Motivation contributed to the overall conceptual model that guided the research.

The research acknowledged the contributions that culture has on influencing health behaviors in Zimbabwe and as such, *culture* was at the core of the study's conceptual model. Mazrui (1986) defines culture as "a system of interrelated values

active enough to influence and condition perception, judgment, communication, and behavior in a given society" (as cited in Airhihenbuwa & Webster, 2004, p. 5). Airhihenbuwa and colleagues (2013) propose that "culture shapes how personal understandings of health and illness are constructed and normalized by influencing health perceptions and health seeking practices" (p. 78).

The *physical and social environment* is influenced by culture and is a key influence on maternal health in Zimbabwe. Physical environmental influences include availability or accessibility to health resources or physical structures that inherently reduce or increase opportunities for healthy behaviors and outcomes (Cohen et al., 2000). Social environmental influences include social structures such as laws or policies that promote or prohibit behaviors or cultural and media messages that are viewed regularly (Cohen et al., 2000). We worked collaboratively with study participants to describe the physical and social environment and its influences on conceptualizations of pregnancy and planning for pregnancy.

The research addressed four factors of the social ecological model (individual, interpersonal, institutional, and community factors). *Individual or intrapersonal factors* are a person's knowledge, attitudes and beliefs that are reciprocally influenced by *interpersonal factors* such as family, friends and peers that provide social support and interact to create *relationships & expectations*. Furthermore, there is a reciprocal link between interpersonal factors and *institutional factors* such as rules, regulations, policies, and informal structures with a final reciprocal link between institutional and *community factors* such as formal or informal social networks and norms, among individuals, groups and organizations. These 4 factors interact within the cultural context and physical and

social environment to influence conceptualizations of pregnancy and planning for pregnancy that will then inform the identification of possible *health targets and best practices for pre-pregnancy planning*. Health targets include those specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention while pre-pregnancy planning are any efforts at the individual level to modify or sustain positive health and health behaviors before pregnancy to mitigate adverse risk and improve maternal and child health outcomes.

The health targets and best practices for pre-pregnancy planning will inform how we can develop capacity for pre-pregnancy planning at the individual, institutional and community levels. *Individual or personal capacity* (Potter & Brough, 2004) through knowledge and self-efficacy for pre-pregnancy planning, perceived behavioral control, behavioral intention, and subjective norms. *Institutional capacity* for pre-pregnancy planning and care will be garnered through: 1) *Healthcare facility capacity* (Potter & Brough, 2004) for pre-pregnancy planning and care through the provision of ANC, health education, and obstetric care, and 2) *Educational institution capacity* through health education and social support. *Community capacity* for pre-pregnancy planning and care will be garnered through community mobilization for pre-pregnancy planning and care, community health workers, and health education. These capacities for pre-pregnancy planning and care, in addition to *personal, institutional, and community motivation* for pre-pregnancy planning will result in *pre-pregnancy planning*. Pre-pregnancy planning will then result in pre-pregnancy, pregnancy, and post-pregnancy care (provided directly through institutional and community capacity) to reduce maternal and child morbidity and mortality.

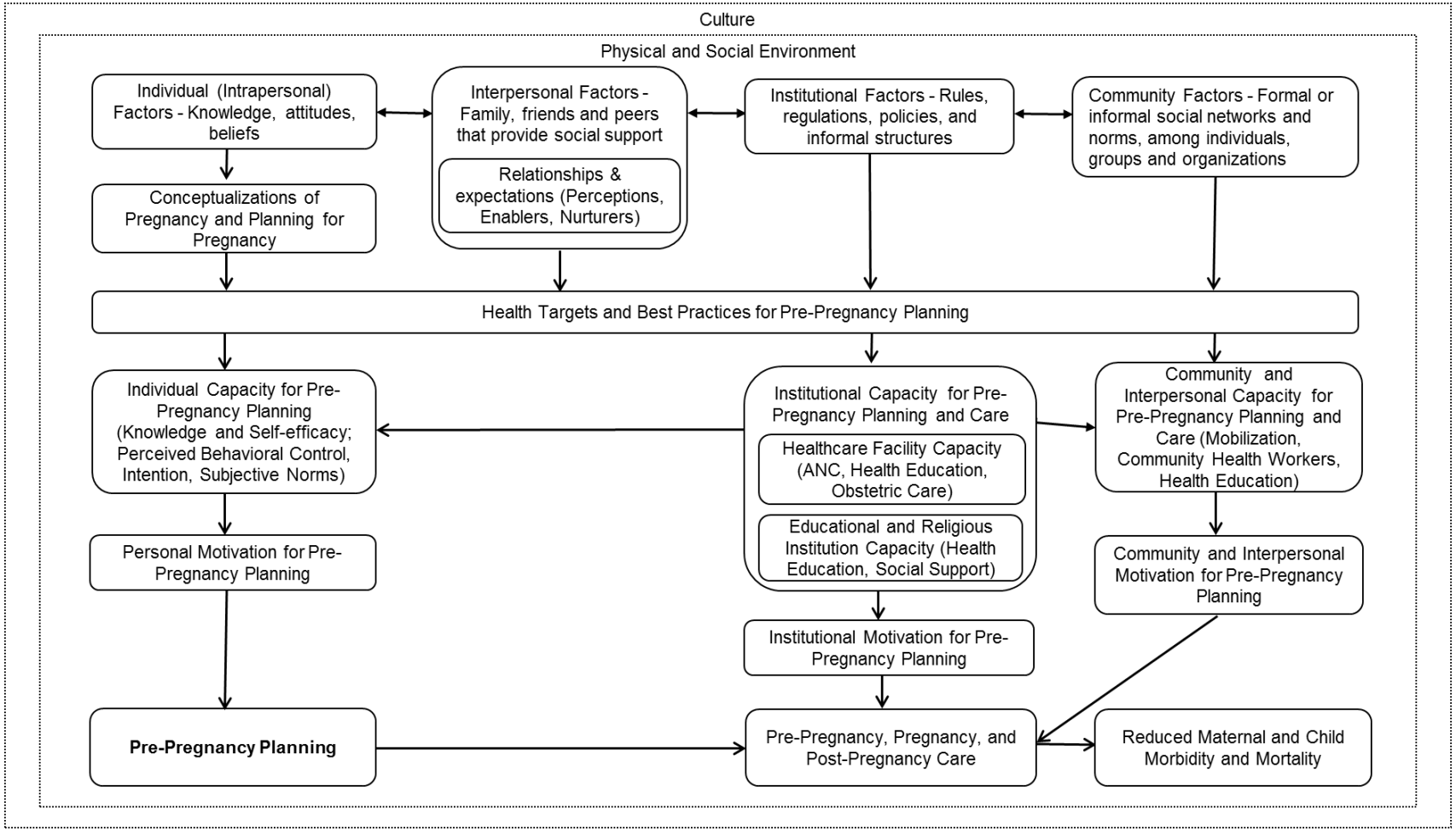

Figure 3.1 Conceptual Model: Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Adolescent Girls and Young Women in Harare, Zimbabwe

3.4 Sampling

Sample Size

Figure 3.2 below illustrates the sample size by site for data collected for **specific aims 1-3**.

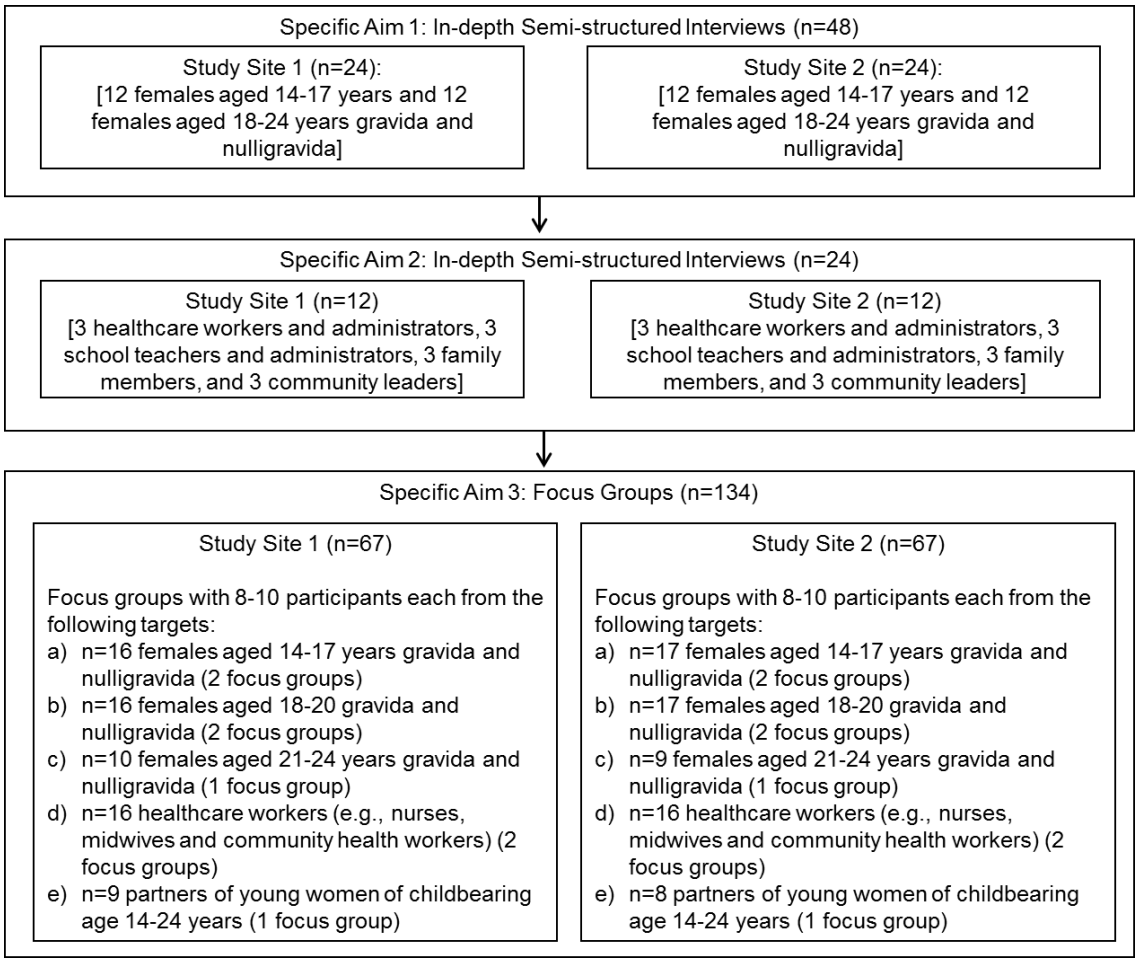

Figure 3.2 Flow Chart Illustrating Sample Size by Site (Total N=206)

The study had a total of 206 participants. For **specific aim 1**, participants included 24 females aged 14-17 years and 24 females aged 18-24 years gravida and nulligravida (with or without a previous or current pregnancy) who resided in Mabvuku and Kuwadzana (n=12 for each location and age group). For **specific aim 2**, participants included from each location 3 healthcare workers and administrators, 3 school teachers

and administrators, 3 family members, and 3 community leaders (e.g. elders, church leaders, community representatives), for a total of 24 participants. For **specific aim 3**, 16 focus groups were conducted with 8-10 participants in each group with the following target groups: a) females aged 14-17 years gravida and nulligravida (2 focus groups from each location), b) females aged 18-20 years gravida and nulligravida (2 focus groups from each location), c) females aged 21-24 years gravida and nulligravida (1 focus groups from each location), d) healthcare workers (e.g., nurses, midwives, community health workers) (2 focus groups from each location), and e) partners of adolescent girls and young women (14-24 years) (1 focus group from each location). A small sample (n=13) of adolescent girls and young women who participated in the interviews for specific aim 1 also participated in the focus groups.

3.5 Participant Recruitment

The research utilized purposive sampling to achieve maximum representativeness (Patton, 2002). Recruitment of study participants occurred at various locations within Mabvuku and Kuwadzana such as churches, clinics, and schools and was conducted by the principal investigator and a trained research assistant. Community health nurses from each study location were identified early on in the recruitment process and they were influential in assisting the principal investigator and research assistant in recruiting participants within the communities. Recruitment was conducted at various locations within the study communities to ensure that the study sample was not homogenous in terms of place of recruitment or socio-demographic characteristics (i.e. marital status, religious affiliation, previous pregnancy). The purposive samples

were recruited through fliers (Appendix A), snowball, and in-person recruitment. Participants were screened for eligibility and prior to participating they provided signed written consent if they are between 18-24 years and signed written assent and guardian signed approval if they were between 14-17 years. All participants received a US$5 incentive for participating in the study.

3.6 Data Collection

Procedure

For **specific aims 1 and 2** in-depth semi-structured interviews were conducted with 48 adolescent girls and young women and 24 teachers, community leaders, healthcare workers and family members. For **specific aim 3** 16 focus groups were conducted with adolescent girls, young women, healthcare workers, and partners of adolescent girls and young women. A semi-structured interview guide (Appendix B), focus group discussion guide (Appendix C), socio-demographic survey (Appendix D), consent, assent, and guardian consent forms (Appendix E) were developed by the research team in English and professionally translated into Shona. In developing the interview and focus groups questions the first author reviewed existing literature where similar qualitative methods were used to assess perspectives on pregnancy and reproductive health across varying populations. Research committee members then reviewed and revised the interview and focus group questions as needed. The interview and focus group questions were open-ended to allow the participants to answer openly and interviewers and facilitators followed the instructions highlighted in the interview and focus group guides (Roulston, 2010). Prior to data collection, interview and focus

group guides were pre-tested with a small sample (5 interviews and 2 focus groups) of individuals who met the eligibility criteria of the intended audience, but who did not reside in the study sites. Interviews were between 45-60 minutes in length, and focus groups were approximately 60 minutes in length. The principal investigator and a trained research assistant fluent in Shona and English collected interview and focus group data. After providing consent, participants completed a brief interviewer-administered socio-demographic survey immediately prior to each of the interviews and focus groups. Participants were interviewed at a place and time of their choice; however, most participants chose to conduct the interviews and focus groups at the study community clinics where the research team was assigned an open private office to conduct study activities. The interviewers and facilitators took detailed field notes during and immediately following the interviews and focus groups to document various aspects of the environment of the interview (such as noise or interruptions), any additional observations, and the interviewer's opinions about the overall quality of the interview. Each focus group had a facilitator and a note taker who wrote detailed notes in addition to the field notes. Semi-structured interviews and focus groups were audio-recorded by the interviewer and note taker and transcribed verbatim then translated by professional transcriptionists and translators. Participants received US$5 for participating in the research.

3.7 Data Management

Research data were confidential. Data were stored in a locked cabinet, a secure computer server, and a password protected digital filing system. All research data were

accessed by the research team only. Participants were assigned an identification (ID) number and no names linking participants to data were recorded on any study documents.

3.8 Data Analysis

Socio-demographic data were analyzed using SAS 9.3. Data for **specific aims 1 and 2** were analyzed before data were collected for **specific aim 3** so that the results could inform **specific aim 3** activities.

Interviews

Specific Aim 1

The transcribed and translated texts were analyzed thematically using NVivo 10 qualitative data analysis software to determine preliminary emergent codes and themes (Saldaña, 2013). Interview transcripts for specific aim 1 were analyzed in a separate NVivo file. The analysis was data driven (inductive) with no pre-determined codes. Rather, a codebook was developed with the initial emergent codes and was refined as data analysis progressed and saturation was reached. The principal investigator began by coding 8 interviews for emergent themes and the trained research assistant hand coded the same 8 transcripts independently. Coding from both the principal investigator and the research assistant were reviewed for comparisons and similarities and an initial codebook was developed. Another member of the research team reviewed the preliminary codebook and eight coded transcripts. Using the preliminary code book the team coded responses to each question in the interview guide and developed a code list for each question; an approach which was enabled by the format of the interview guide

that included questions about pregnancy and planning for pregnancy in separate parts of the interview. For example, question #10 in the interview guide read, "When you hear the word 'pregnancy', what comes to mind?" All responses to this question were coded across all the transcripts. The principal investigator then reviewed the full transcripts again to code participant's descriptions of pregnancy and planning for pregnancy meaning that were stated elsewhere in the interview transcripts to ensure that responses were fully captured. A final list of emergent codes was developed across all interviews and these codes were refined and then grouped based on similar themes that emerged (Appendix F). Participant's socio-demographic data were also uploaded into the NVivo file and used to analyze coding results based on participant demographics such as age and pregnancy status.

Specific Aim 2

The transcribed and translated texts were analyzed thematically using NVivo 10 qualitative data analysis software to determine preliminary emergent codes and themes (Saldaña, 2013). Interview transcripts for specific aim 2 were analyzed in a separate NVivo file. The analysis was data driven (inductive) with no pre-determined codes. Rather, a codebook was developed with the initial emergent codes and was refined as data analysis progressed and saturation was reached. The principal investigator began by coding 8 interviews for emergent themes and the trained research assistant hand coded the same 8 transcripts independently. Coding from both the principal investigator and the research assistant were reviewed for comparisons and similarities and an initial codebook was developed. Another research team member reviewed the preliminary codebook and coded transcripts. Thereafter, the preliminary codebook was used to open code the

remainder of the transcripts. The codebook was revised based on the additional coding until saturation was reached. The final codebook was used to group codes based on similar themes that emerged (Appendix F).

Focus Groups

Specific Aim 3

The transcribed and translated texts were analyzed thematically using NVivo 10 qualitative data analysis software to determine preliminary emergent codes and themes (Saldaña, 2013). Focus group transcripts for specific aim 2 were analyzed in a separate NVivo file. Similar to the interview data, focus group transcripts for specific aim 3 were analyzed using a data driven (inductive) approach with no pre-determined codes. A codebook was developed with the initial emergent codes and was refined as data analysis progressed and saturation was reached. The principal investigator began by coding 2 focus group transcripts for emergent codes based on each section and question in the focus group guide. The trained research assistant hand coded the same 2 transcripts independently. Coding from both the principal investigator and the trained research assistant were reviewed for comparisons and similarities and an initial codebook was developed. The code list was refined further after coding the remainder of the transcripts until saturation was reached. This final code book was used to group codes into themes based on similar themes that emerged (Appendix F). Participant's socio-demographic data were also uploaded into the NVivo files and used to analyze coding results based on participant type and age.

In order to ensure face and construct validity, interviewer triangulation was used to offset threats to validity inherent in using a single interviewer (Maxwell, 2004). The triangulation validation strategy was also employed by using multiple data analysts to review the data and multiple methods of data collection with interviews and focus groups. Interview and focus group results were member checked with a small sample (n=15 for interviews and n=15 for focus groups) of the participants who participated in the interviews and focus groups to ensure that information presented in the study results was congruent with the information participants provided (Guba & Lincoln, 1981; Lather, 1986).

3.9 Ethical Considerations and Ethical Approval Mechanism

Approval to conduct the research was sought and received from the University of South Carolina institutional review board, City of Harare ethics committee, and the Medical Research Council of Zimbabwe prior to conducting any study activities (Appendix G). Risks of participating in this study were minimal and were no greater than those in daily life. Risks of coercion or undue influence were minimized by providing a consent form at a sixth-grade reading level in both English and Shona and emphasizing that participation was voluntary and confidential. Participants could also stop participating in the interview or focus group at any time if they chose to do so.

3.10 Dissemination Plan

Results of the dissertation research will be disseminated to study communities, the City of Harare, the Medical Research Council of Zimbabwe and various stakeholders in

governmental and non-governmental organizations in Zimbabwe and internationally through presentations and reports. Manuscripts will also be developed for dissemination to peer-reviewed public health journals. The dissertation research may lead to the development and pilot testing of a pre-pregnancy planning intervention which if effective, could guide similar intervention development and implementation across the country and inform future pre-pregnancy policy in Zimbabwe.

CHAPTER 4

RESULTS

This chapter presents the results of the dissertation research in the form of two manuscripts. Manuscript 1, which corresponds with specific aim 1 of the study, presents results from the semi-structured in-depth interviews with adolescent girls and young women to understand their conceptualizations of pregnancy and planning for pregnancy. Manuscript 1 is prepared for submission to the *Social Science and Medicine* journal. Manuscript 2, which corresponds to specific aim 2 of the study, presents results from the semi-structured interviews with key community stakeholders to understand the social environment related to pregnancy and planning for pregnancy and its influence on pregnancy-related decisions and practices. Manuscript 2 is prepared for submission to the *Maternal and Child Health Journal*. Additional research results for specific aim 2 which explored the physical environment related to pregnancy and planning for pregnancy are presented in Appendix H and results for specific aim 3 where focus groups were conducted with adolescent girls, young women, healthcare workers, and partners to identify potential pre-pregnancy targets and efforts to improve young women's health before pregnancy are presented in Appendix I.

4.1 Understanding Conceptualizations of Pregnancy and Planning for Pregnancy among Adolescent Girls and Young Women in Harare, Zimbabwe[1]

[1] Tinago CB, Ingram Annang L, Frongillo EA, Blake CE, Engelsmann B, and Simmons D. To be submitted to *Social Science and Medicine*

Abstract

Zimbabwe has one of the highest rates of maternal mortality, yet little is understood about adolescent girls and young women's perspectives on pregnancy or planning for pregnancy; important information to aid efforts to improve maternal health. The research study took an emic approach to understand and describe how adolescent girls and young women (14-24 years) in Harare, Zimbabwe conceptualize pregnancy and planning for pregnancy and how these conceptualizations inform decisions about pregnancy and planning for pregnancy. Semi-structured, in-depth, qualitative interviews were conducted in both Shona and English with adolescent girls and young women aged 14-24 years (N=48) who lived in two low-income high-density communities in Harare. Data were analyzed thematically using NVivo 10 software. Conceptualizations of pregnancy focused on the social aspects of pregnancy. Pregnancy was conceptualized across 8 themes: carrying a child, motherhood, the best time for pregnancy, pregnancy decision makers, who is responsible for the pregnancy, pregnancy burden, pregnancy dangers, and increase in social status with pregnancy. Participants expressed mixed views concerning the possibility of planning a pregnancy. Planning for pregnancy was conceptualized during the pre-pregnancy, pregnancy, and post-pregnancy phases, with planning beginning in early adolescence with a plan to avoid sexual activity to prevent pregnancy. Findings highlight the need to consider socio-cultural views concerning pregnancy and include social networks in maternal health efforts in Zimbabwe. More studies are needed to understand women's perspectives on pregnancy and what it means to “plan for pregnancy” to enhance the effectiveness of efforts to improve pregnancy outcomes and maternal and child health in Zimbabwe.

Keywords: pregnancy, planning for pregnancy, qualitative research, adolescent females, Zimbabwe, maternal health

Introduction

Globally, about 830 women of childbearing age die every day due to complications of pregnancy and child birth, while over 15 million suffer long term illness or disability (Bhutta, Dean, Imam, & Lassi, 2011; WHO, 2015). An estimated 99% of all global maternal mortality occurs in developing countries, with sub-Saharan Africa accounting for 66% of these maternal deaths (WHO, 2015). Most maternal deaths occur during labor, delivery, and the immediate postpartum period (Bhutta et al., 2011). Obstetric hemorrhage is the main medical cause of maternal death with other causes being hypertensive diseases, sepsis/infections, obstructed labor, and abortion related complications (Bhutta et al., 2011). Globally, young adolescent females face a higher risk of maternal mortality with pregnancy and childbirth complications being the leading cause of death among adolescent girls in developing countries (Conde-Agudelo, Belizán, & Lammers, 2005; Patton et al., 2009).

Although global maternal mortality dropped by almost 44% between 1990 and 2015, Zimbabwe experienced an increase in maternal deaths within this time period with a maternal mortality ratio that increased from 555 to 960 deaths per 100,000 live births between the 2005-2006 and 2010-11 Zimbabwe Demographic and Health Surveys (ZDHS) respectively (WHO, 2015; ZDHS, 2012). The latest national maternal mortality data from the 2014 Multiple Indictor Cluster Survey outlined a lower maternal mortality

ratio at 581 deaths per 100,000 live births; however, this rate is still nearly twice as high as the national health strategy target of reducing the maternal mortality ratio to 350 deaths per 100,000 live births by 2015 (National Health Service, 2009; ZIMSTAT, 2015).

The leading causes of maternal mortality in Zimbabwe accounting for 80% of all maternal deaths are HIV/AIDS, pregnancy induced hypertension/eclampsia, postpartum hemorrhage, puerperal sepsis, and malaria (Munjanja, 2009). Current approaches to reducing maternal mortality focus on the pregnancy period with an emphasis on antenatal care, obstetric care, and micronutrient supplementation during pregnancy (National Health Service (NHS), 2009; WHO, 2014). Although important, these approaches are not reaching a large number of women due to delayed or non-uptake of antenatal care, home deliveries, low adherence to micronutrient supplementation in pregnancy, and structural challenges within the healthcare system such as staff shortages (City of Harare, 2012; Darnton-Hill, 2012; Gadaga, Madzima, & Nembaware, 2009; Munjanja, 2009; ZDHS, 2012).

In order to improve the effectiveness of maternal health efforts in Zimbabwe, an understanding of pregnancy perceptions is important, yet little is known about women's perceptions of pregnancy or planning for pregnancy in developing countries like Zimbabwe. Schweizer (1998) emphasized that change agents need to have a fundamental understanding about the target group's knowledge, attitudes, beliefs, values, and cognitive systems before designing efforts to address health issues. Emic approaches that preserve participant perspectives through qualitative methods are one of the most appropriate approaches to garner these understandings (Monterrosa, Pelto, Frongillo, & Rasmussen, 2012; Pelto & Pelto, 1978). Helfrich (1999) describes these emic approaches

as views of phenomena through the eyes of participants and posits that within this approach, culture is an integral component of human behavior.

These emic approaches have been applied effectively to, for example, explain maternal behavior and understandings to inform the development of effective behavior change interventions by assessing maternal conceptualizations of child feeding practices in Mexico (Monterrosa et al., 2012). Additional examples include a study conducted by Arps (2009) that assessed understandings of the underlying causes of maternal death among women in Honduras to identify the influences that increase women's vulnerability during pregnancy and childbirth and a study by Zamawe (2013) that assessed the factors that affect maternal care seeking behavior and the choice of practitioner during complications among women in Malawi. All of these studies identified possible differences between the emic, or women's perspectives, and the biomedical perceptions of maternal health and risk. For example witchcraft and sorcery were identified as major threats to safe motherhood among women in the aforementioned Honduras study that points to potential areas of focus for interventions that do not necessary align with common biomedical approaches (Arps, 2009).

Among the few studies that explored conceptualizations of pregnancy and planning for pregnancy among women in developing countries, similar findings of differences between emic and biomedical perspectives were identified. For example a qualitative study conducted by White (2002) to describe Khmer women's views about complications during pregnancy, birth, and postpartum found that women viewed swelling during pregnancy as a normal accepted occurrence and postpartum bleeding as

cleansing and, therefore, desirable; both considered potentially dangerous by biomedical standards.

In Zimbabwe, conceptualizations of pregnancy and planning for pregnancy are particularly needed among adolescent girls and young women (14-24 years) because this is the age group where childbearing begins and with the highest risk of maternal death (Viner et al., 2012; ZDHS, 2012). The median age of childbearing in Zimbabwe is 20.2 years and 24% of adolescent females in Zimbabwe aged 15-19 years have begun childbearing (ZDHS, 2012). A fundamental understanding of how adolescent girls and young women in Zimbabwe conceptualize pregnancy and planning for pregnancy has the potential to assist in current and future efforts to improve maternal health in Zimbabwe.

The research study took an emic approach (Pelto & Pelto, 1978) to understand and describe how adolescent girls and young women (14-24 years) in Harare, Zimbabwe conceptualize pregnancy and planning for pregnancy, and how the aforementioned conceptualizations inform decisions about pregnancy and planning for pregnancy.

Methods

Study Setting

Zimbabwe is located in south-east Africa and has a population of 12,973,808 (48.1% males; 51.9% females) (Zimbabwe National Statistics Agency (ZIMSTAT), 2013). The research was conducted in Mabvuku and Kuwadzana, which are two high-density low-income communities located in the capital city Harare which has the highest recorded rate of maternal mortality with 29% of the national maternal deaths (Munjanja, 2009; ZDHS, 2012). Mabvuku has a population of 47,154 and is located in the eastern

part of the city while Kuwadzana has a population of 171,911 and is located in the western part of Harare (City of Harare, 2014). English is the official language of Zimbabwe and Shona is the predominant local language.

Design

A qualitative research design was used with semi-structured in-depth interviews. Interviews were conducted in both English and Shona by the principal investigator and a trained research assistant who were fluent in English and Shona. The study sample included a purposive sample of 24 females aged 14-17 years and 24 females aged 18-24 years with or without a previous or current pregnancy who resided in each of the study communities (n=12 for each location and age group).

Procedure

A semi-structured interview guide, socio-demographic survey, participant consent, child assent, and guardian consent forms were developed by the research team in English and translated into Shona. Prior to data collection, interview questions were pre-tested with a small sample (4 interviews) of individuals who met the eligibility criteria of the intended participants, but who did not reside in the study communities. The research utilized purposive sampling to achieve maximum representativeness (Patton, 2002). Recruitment was conducted by the principal investigator, a trained research assistant and community health workers from each of the study communities. Recruitment occurred at various locations within the study communities (such as churches, clinics, and schools) via fliers, snowball, and in-person recruitment to ensure that the study sample was heterogeneous. Interviews were conducted in an office at the local clinic in each study community, which was the preferred interviewing location for participants. Participants

were screened for eligibility, and prior to participating they provided written consent if they were between 18-24 years, while participants aged 14-17 provided written child assent and a guardian signed a consent form. Interviews were between 45-60 minutes in length. The interviewers took detailed field notes during and immediately following the interviews. Participants received a US$5 incentive for participating in the study. Interviews were audio-recorded by the interviewers and transcribed verbatim then translated by professional translators and transcriptionists.

Ethical Considerations and Ethical Approval Mechanism

Approval to conduct the research was sought and received from the University of South Carolina institutional review board, City of Harare ethics committee, and the Medical Research Council of Zimbabwe prior to conducting any study activities.

Data Analysis

The transcribed and translated texts were analyzed thematically using NVivo 10 qualitative data analysis software to determine preliminary emergent codes and themes (Saldaña, 2013). The analysis was data driven (inductive) with no pre-determined codes. Rather, a codebook was developed with the initial emergent codes and was refined as data analysis progressed and saturation was reached. The principal investigator began by coding 8 interviews for emergent themes and the trained research assistant hand coded the same 8 transcripts independently. Coding from both the principal investigator and the research assistant were reviewed for comparisons and similarities and an initial codebook was developed. Another member of the research team reviewed the preliminary codebook and eight coded transcripts. Using the preliminary code book the team coded responses to each question in the interview guide and developed a code list for each question; an

approach which was enabled by the format of the interview guide that included questions about pregnancy and planning for pregnancy in separate parts of the interview. For example, question #10 in the interview guide read, "When you hear the word 'pregnancy', what comes to mind?" All responses to this question were coded across all the transcripts. The principal investigator then reviewed the full transcripts again to code participant's descriptions of pregnancy and planning for pregnancy meaning that were stated elsewhere in the interview transcripts to ensure that responses were fully captured. A final list of emergent codes was developed across all interviews and these codes were refined and then grouped based on similar themes that emerged. Participant's socio-demographic data were also uploaded into the NVivo file and used to analyze coding results based on participant demographics such as age and pregnancy status. Socio-demographic data were analyzed using SAS 9.3.

In order to ensure face and construct validity, interviewer triangulation was used to offset threats to validity inherent in using a single interviewer (Maxwell, 2004). The triangulation validation strategy was also employed by using multiple data analysts to review the data. Interview results were member checked with a small sample (n=15) of the participants to ensure that information presented in the study results was congruent with the information participants provided (Guba & Lincoln, 1981; Lather, 1986).

Results

Study results are presented according to sample characteristics and emergent themes about pregnancy and planning for pregnancy. Participant quotes are identified by participant age and pregnancy status (i.e. previously pregnant, pregnant, never pregnant).

Sample Characteristics

The mean age of the sample was 18 years (range 14–24 years), and all were Black females of Shona ethnicity. Most young women were never married (64.6%), had a high school education between Form 1-4 (Grade 8-11) (87.5%), were Christian Pentecostal (56.25%), had no main source of income (50.0%), did not have a prior pregnancy (66.7%), did not have children (68.75%) and were not currently pregnant (75.0%) (Table 4.1).

Table 4.1. Socio-demographic Characteristics of Study of Participants (N=48)

	n (%)
Characteristic	
Age	
Mean Age (Years)	18
Age Range (Years)	14-24
Gender	
Female	48(100.0)
Race	
Black	48(100.0)
Ethnicity	
Shona	48(100.0)
Marital Status	
Divorced or separated	1(2.1)
Married - Monogamous	16(33.3)
Never Married	31(64.6)
Education Level	
Primary (Grade 1-7)	3(6.25)
High school (Form 1-4)	42(87.5)
High school (Form 5-6)	3(6.25)
Religious Affiliation	
Apostolic	7(14.6)
Catholic	6(12.5)
Protestant	5(10.4)
Pentecostal	27(56.25)
Other	3(6.25)
Main Source of Income	
Formally employed	4(8.3)
Self-employed	1(2.1)
Dependent on partner/family	19(39.6)
None	24(50.0)

Prior Pregnancies	
Yes	16(33.3)
No	32(66.7)
Children	
Yes	15(31.25)
No	33(68.75)
Currently Pregnant	
Yes	12(25.0)
No	36(75.0)

Conceptualizations of Pregnancy

Young women in this study were mostly open about sharing their views about pregnancy; however, adolescent girls aged 14-17 years were surprised that we were asking them their thoughts about pregnancy. When asked about their thoughts about pregnancy, some adolescent girls immediately expressed shock with their facial expression or giggled uncomfortably and were sometimes quick to respond with statements such as, "I don't know much about pregnancy since I have not been pregnant and I am not yet of age since I am still a child in school" (15 years, never pregnant). Adolescent girls with children or who were pregnant were less likely to express their surprise at the topic of the interview and they spoke more openly about their views.

Pregnancy, among study participants, was conceptualized as carrying a child, being a mother, understanding the best time for pregnancy, identifying pregnancy decision makers, determining who is responsible for the pregnancy, anticipating pregnancy burden, anticipating pregnancy dangers, and experiencing increases in social status with pregnancy.

Carrying a child

Most participants in the study conceptualized pregnancy as "carrying a child" with descriptions of pregnancy such as "Pregnancy means someone who is carrying a

baby" (17 years, never pregnant) and "It means that I will be carrying a child" (20 years, pregnant). Participants also described how the family will grow with a young woman stating, "I think pregnancy enlarges the family as the Shona people say. The future generation also comes from the children that are born" (19 years, never pregnant). The child or children would then take care of the young women in the future. An adolescent girl explained, "Pregnancy is good is that you can give birth to your child or children who can take care of you in the future" (17 years, never pregnant).

Motherhood

Study participants spoke about how they associated pregnancy with motherhood. In describing what came to mind when she thought about pregnancy, an adolescent girl stated, "What comes to mind is that a person is about to become a mother. When you deliver the baby you will be a mother" (15 years, never pregnant). Motherhood was therefore a positive aspect about pregnancy with an adolescent girl describing that in adulthood, they were "wanting to be called mother of someone which is something that is pleasing because some are crying because they cannot be pregnant. So it is something that is pleasing to be called mother of so and so" (15 years, never pregnant). Young women also spoke about the joys of motherhood stating, "In as much as it's painful and, and what not, the joys of being a mother, nothing can compare to that. Knowing that you gave birth, you brought another life into this world. I am sure there is nothing that can compare to that" (20 years, never pregnant).

The best time for pregnancy

Participants described the best time for pregnancy which they often termed the "right time" which encompassed age, marital status, education, income and livelihood.

According to participants, the best age for pregnancy was in the mid-twenties because participants viewed this age as one where women will be mature, physically strong to carry and deliver a pregnancy, out of post-secondary education, and able to support oneself financially. One participant stated: "I think that when you have finished school then you are mature enough to have a child. I think that is the right time for pregnancy…at 23 or 24 years" (19 years, never pregnant). Financial stability was a term some young women used with a young woman stating that the best time for pregnancy is "when you are financially stable" (20 years, never pregnant). They described financial stability occurring after finishing school and getting a job to be able to financially support the pregnancy.

Marriage was also an important factor in determining the best time for pregnancy and among all study participants, pregnancy was a cultural expectation within the confines of marriage with one young woman stating, "it is common knowledge that one should become pregnant" (24 years, previously pregnant). An adolescent girl explained the best time for pregnancy as, "When you are married but not rushing to get married. You are grown, you have worked and are at the right age around 25 years that is when you can become pregnant" (15 years, never pregnant).

The timing of the pregnancy was one of the important influencers in young women's views about the negative and positive aspects of the pregnancy. For example, a young woman stated:

> Pregnancy is negative if the time is not right because you cannot go forward with school. Even your child will face challenges if you have them when you are still young to the extent that you may throw away your child so I think that having a child is good when you have them at the right time. (18 years, never pregnant)

Conversely, when pregnancy occurs during the "right time", an adolescent girl stated, "The positive things about pregnancy is when you are married and can take care of your child" (16 years, never pregnant).

Although study participants spoke at length about the best time for pregnancy, some acknowledged that pregnancies were occurring outside their stated best time due to mischievousness, early marriages, and socio-economic factors with one young woman explaining, "Nowadays there are more children who become pregnant…Someone can become pregnant at the age of 12…So, nowadays there is no age at which a girl should have children. People are just having children" (20 years, previously pregnant).

Decision makers

Some study participants thought that both partners were the primary decision makers responsible for making decisions relating to pregnancy issues. In describing those responsible for pregnancy decisions, a young woman stated:

> All of you, mother and father. Let's say I become pregnant based on a decision I made alone and my husband didn't agree, how will I be able to afford to purchase the items the baby will need without communicating with my husband? But after we have agreed with my husband then I can manage to do all that is needed to be done. (23 years, pregnant and previously pregnant)

Most participants viewed the decision-making related to pregnancy issues to be outside their control, however, deferring authority to their partner, healthcare provider, or family members. A young woman explained, "For me, my husband can make decisions. My parents can also tell me what to do. The nurse can also advise me on planning my family and also for me to get things that can protect the health of my family" (18 years, pregnant). An adolescent girl explained that the pregnancy decision-maker was, "The man…because he is responsible for the pregnancy" (17 years, previously pregnant).

Other family members included in pregnancy decision-making were grandmothers, aunts, and mothers-in-law.

Who is responsible for the pregnancy?

Adolescent girls were more likely to conceptualize pregnancy in terms of who was responsible for the pregnancy when compared to young women. As one adolescent girl described, "There are different pregnancies. There is a pregnancy with a responsible father and those without a responsible father" (17 years, pregnant). Like most women in the study, a young woman stated, "The person responsible for the pregnancy is the father of the baby" (19 years, previously pregnant). As such, if the person responsible in not in a relationship with the mother of the baby, or does not financially support the pregnancy, then participants described this as a negative consequence of pregnancy with one adolescent girl stating, "Having a baby without a responsible father. Sometimes people will be scolding and beating you asking you who is the father of the baby. So you should have a baby with a responsible father. If you have a baby without a father, it would not work out (15 years, never pregnant).

Pregnancy burden

A common term used among some participants when describing pregnancy was that it was a burden. When describing pregnancy, a young woman said:

> A burden. A very huge burden because carrying someone in your tummy eesh is kinda hectic. So I can't say that it is easy. It is something that you are entering into a responsibility. It's something that you must consider very well, because it is not something to play around with. It is something that is important because you are carrying someone's life. (19 years, pregnant)

Another young woman also described how subsequent pregnancies could burden the family financially, explaining:

> The disadvantage of being pregnant is that you add another burden and as such there is need for more food…there is need for more stuff. There will be some strain on an individual because if you had 3 children, they will be 4, which means you should go an extra mile…and you might fail to do that. (19 years, never pregnant)

The burden could also fall upon parents or caregivers of young women with an adolescent girl stating, "Some are naughty and they may become pregnant and get left by the person who made them pregnant and they will burden their parents so it is something that should not be done to me at my age" (15 years, never pregnant).

Pregnancy dangers

Participants acknowledged the dangers of pregnancy. In describing what came to mind when she heard the word "pregnancy", a young woman responded:

> What comes to mind is that pregnancy is good on one side, but on the other side there are dangers. Because with pregnancy you can face whether you can deliver your child well or you can deliver a child who is disabled…Other dangers with pregnancy are you can be HIV positive or you can be HIV negative. So like those who are HIV positive some, many of them, cannot accept it and this leads to maybe newborn babies dying because someone may not have taken their medication while they were pregnant or the baby is born with the illness." (22 years, pregnant and previously pregnant)

Another young woman stated, "When I'm pregnant I mostly think that if only God could let me see my child's birth, and hold my child in my arms. I just pray to God that I may not have any complications or problems during my pregnancy. That's what comes to mind and what I pray for all the time" (20 years, pregnant and previously pregnant). Additional pregnancy dangers described included miscarriages, still births, illnesses such as high blood pressure or anemia, or death of the mother or child. These pregnancy dangers were the driving influence in young women's fear of pregnancy. A young woman stated, "At times you think you can die because of the pregnancy because you

have seen someone who died because of being pregnant and you become afraid of that" (24 years, previously pregnant).

Increase in social status with pregnancy: Treated like a queen

Study participants described how pregnancy even outside the confines of their stated "best time for pregnancy" elevated a person's social standing within the community. A young woman described:

> It is something that is fun, because you will be like a queen…You are being treated very well because the more you get stressed, the more you damage the person inside you. So you are treated like someone who shouldn't be stressed. You must eat the right food so much so that at times when the kids are eating fruits they tell them to give them to this person who wants to take care of their health and the baby. (19 years, pregnant)

An adolescent girl added, "The positive things about pregnancy is that most times you receive a lot of care from those you live with." (17 years, previously pregnant).

Conceptualizations of Planning for Pregnancy

Participants described three phases or periods for planning for pregnancy; pre-pregnancy, pregnancy, and post-pregnancy.

Planning for pregnancy during the pre-pregnancy period

According to participants, planning for pregnancy during the pre-pregnancy period begins in early adolescence with a plan to abstain from sexual activity until marriage to prevent pre-marital pregnancy. Before marriage, an adolescent girl or young woman hopes to complete secondary education and either go directly into formal or informal employment or advance to post-secondary education. Education and employment are all processes that occur to increase maturity and self-reliance of the young woman to be able to take care of a future pregnancy. Upon deciding on a partner, both the young woman and the partner will get tested for HIV so that they know their

status before marriage. A young woman described, “Through planning, if you are infected with the virus...you will be tested...that can protect the fetus if you are taking tablets” (20 years, previously pregnant). After marriage, a young woman is expected to have a child so no “planning” (in the Western sense) is expected; they should just have a baby since in this context, pregnancy is a cultural expectation in the confines of marriage. One young woman described what she called the “process” of planning for pregnancy and how it differed between the time before and after marriage stating:

> If it is planned well, that you finish school as a female and you get a job, it’s a process. There will come a time when they will want to marry. When you marry it will be another stage where they will be able to plan their family. So I think that planning a family is possible. There are those who become pregnant without planning and it is because they will not have followed the proper steps. (24 years, never pregnant)

Planning for pregnancy during the pregnancy period

Participants described planning for pregnancy during the pregnancy period as centering on ensuring that the baby is registered during an antenatal care (ANC) visit at a health facility where the pregnancy is examined to ensure the health of the pregnant woman and her unborn baby. Financial preparations also occur so that the basic necessities are available for the baby’s birth and upbringing. In describing her perspectives on planning for pregnancy a young woman described:

> What comes to mind is I think about preparation. Does the baby have a nice place to live? Does the baby have food to eat? Will you be able to clothe the baby? Even the soap to wash clothes, will it be there. Also, the people who she is living with, will they be able to take care of her? That’s what I think. (24 years, never pregnant)

An adolescent girl added, “What comes to mind is when I am pregnant, how will I provide for the child when I have them. What will I give them because today jobs are

hard to come by and your partner may be lazy and you also don't work so what comes to mind is how I will provide for that child" (17 years, never pregnant).

Planning for pregnancy during the post-pregnancy period

Planning for pregnancy during the post-pregnancy period from the participant's perspectives centers on planning any subsequent pregnancies. Planning includes discussions with the young woman's partner about when to have the child or children with an agreement necessary for the subsequent pregnancy to occur. A young woman described, "If you plan for pregnancy, you can take your time discussing, you and your partner. If you discuss, then you understand each other…you can then have your pregnancy" (22 years, previously pregnant). According to the young women, this discussion mainly centers on "looking at the advantages and disadvantages of having the pregnancy" (19 years, never pregnant). Planning for pregnancy also includes taking contraception until the desired time for the subsequent pregnancy. Participants described contraception as "family planning" and a young woman stated, "I start from family planning. I plan that I want to have a child when the first one reaches a certain age. I will be taking family planning tablets" (18 years, pregnant). As such those that are planning for pregnancy are "people who are expecting to have a child so there is no use of family planning pills" (18 years, never pregnant). The desired spacing among study participants was between 3-5 years post-pregnancy.

Can you plan for pregnancy?

Overall participants expressed mixed views concerning the possibility of planning a pregnancy. Some participants said that it was possible to plan for pregnancy under certain circumstances. One young woman stated, "A pregnancy can be planned,

especially when you get married" (24 years, previously pregnant). Most adolescent girls stated that although they thought it was possible to plan for pregnancy, they did not know much about planning for pregnancy either because they thought they were too young to plan, or because they did not have anywhere to get information about planning for pregnancy. Young women were more likely to describe the various ways a woman can plan for pregnancy where they thought that the aforementioned components of discussing with the partner, preparing to support the child financially, contraception, and HIV testing were important in the planning process.

Some participants definitively stated that it was difficult or that one cannot plan for pregnancy, particularly because there were unplanned pregnancies and because you could not plan for the first child in a marriage since a woman was expected to become pregnant after marriage. As such, some participants thought that it was not possible to plan for the first pregnancy, but it was possible to plan for subsequent pregnancies. One adolescent girl stated in terms of planning the first pregnancy, "I don't see the need for planning because you are expecting the child" (17 years, never pregnant). Other reasons for not being able to plan a pregnancy included "sometimes the husband will not be ready to have a baby when you want to have a baby" (15 years, never pregnant), and "Because you will still be going to school" (16 years, never pregnant).

Discussion

This study documents adolescent girls and young women's conceptualizations of pregnancy and planning for pregnancy in two high-density communities in Harare, Zimbabwe. Similar to results from studies conducted in other developing countries,

participant's conceptualizations of pregnancy had less to do with the biomedical descriptions of pregnancy and more to do with the social aspects of the pregnancy (White, 2002). For example, apart from descriptions of "carrying a child" and the dangers of pregnancy, participants described pregnancy in terms of the best time and environment for pregnancy, motherhood, the pregnancy decision makers, the responsible party for the pregnancy, the pregnancy burden and the increases in social status with pregnancy. As such, pregnancy is not simply the physical state of carrying a child, but includes the socio-cultural beliefs and practices that are associated with carrying the child.

Participant's descriptions of the best time for pregnancy differ from the actual times women in Zimbabwe are beginning child-bearing. For example participants described the best age for pregnancy as in their mid-twenties, yet in Zimbabwe the median age at first birth among women aged 25-49 years is 20.2 years and 24% of women aged 14-19 years have begun childbearing (ZDHS, 2012). Participants outlined the reasons behind the preferred versus the actual first pregnancy as due to mischievousness, early marriages, and socio-economic factors such as poverty that result in early or risky sexual behavior.

Although there are no standard definitions of planning for pregnancy across the literature, there are several clinical and Western definitions that center on the time before pregnancy with physical examinations and health assessments, health behavior changes such as smoking cessation, exercise, micronutrient supplementation, and heathy eating, and contraception use and cessation (Simpson, 1996; Stephenson et al., 2014). A study conducted by Barret and Wellings (2002) assessing British women's understandings of a planned pregnancy highlighted how intending to become pregnant and stopping

contraception were not sufficient criteria for establishing a planned pregnancy, but should also include partner agreement and right timing.

The study results highlight how planning for pregnancy among study participants begins in early adolescence and does not simply occur before a pregnancy, but also during and post-pregnancy. Planning for pregnancy also varied based on whether a person was married or not married and understandings of what is actually meant to "plan a pregnancy" were less evident among adolescent participants aged 14-17 years.

How conceptualizations of pregnancy and planning for pregnancy among adolescent girls and young women in the study influence decisions about pregnancy and planning for pregnancy has a lot to do with their social networks. It appears that much like the aforementioned Shamu et al. (2012) study, women in the study perceived that they had less decision making power than, particularly, their partners in terms of their pregnancy or timing of pregnancy. For example, participants mostly deferred decision-making related to pregnancy to others such as partners, healthcare workers and family members which points to the importance of these social networks in these young women's reproductive health and the need to include these social networks in approaches to improve pregnancy outcomes among this population.

A limitation of this study is that the study sample included participants from only two communities in Harare. Although our results cannot be generalized to all young women in Harare, the study results add to our understandings of women's perspectives on pregnancy and planning for pregnancy.

Conclusions

The research study adds to our understanding of pregnancy and planning for pregnancy from the perspectives of adolescent girls and young women (14-24 years) in Harare, Zimbabwe and how the aforementioned perspectives inform decisions about pregnancy and planning for pregnancy. Results of this study point to conceptualizations of pregnancy that focus on the social aspects of pregnancy. The study also highlighted a differing view from the literature on planning for pregnancy where planning for pregnancy begins in early adolescence and does not simply focus on the time before pregnancy but also includes the pregnancy and post-pregnancy periods. As such, more studies are needed to understand adolescent girls and young women's perspectives on pregnancy and also what it really means to "plan for pregnancy" to improve the effectiveness of efforts to improve pregnancy outcomes and overall maternal and child health in developing countries like Zimbabwe.

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4.2 Understanding the Social Environmental Influences on Pregnancy and Planning for Pregnancy in Harare, Zimbabwe[2]

[2] Tinago CB, Ingram Annang L, Frongillo EA, Simmons D, Blake CE, and Engelsmann B. To be submitted to *Maternal and Child Health Journal*

Abstract

Objectives: Social environmental influences on pregnancy-related practices and outcomes have been studied across the literature, yet few studies explore these influences qualitatively from the perspectives of women's personal social networks and the larger social networks that exist within their communities. These social networks, which are a component of the social environment, serve as resources and sources of social support that could potentially contribute to pregnancy-related practices and outcomes in addition to providing insight on the broader social environmental context. This study sought to understand and describe the social environment related to pregnancy and planning for pregnancy in Harare, Zimbabwe from the perspectives of women's social networks, and its influence on pregnancy-related decisions and practices.

Methods: Semi-structured, in-depth, qualitative interviews were conducted in both Shona and English with 24 key community stakeholders (6 healthcare workers, 6 school teachers, 6 family members of females aged 14-24 years, and 6 community leaders) who lived or worked in two low-income high-density communities in Harare. Data were analyzed thematically using NVivo 10 software.

Results: The social environment related to pregnancy and planning for pregnancy described by participants was deeply rooted in culture and cultural practices. The culture around pregnancy and planning for pregnancy centered on four broad themes: pregnancy importance, pregnancy silence, patriarchy, and community support in pregnancy.

Conclusions for Practice: Pregnancy efforts in Zimbabwe should acknowledge cultural influences on pregnancy and address pregnancy silence to improve reproductive health

communication, empower women to be partners in the pregnancy decision-making process, and include women's social networks.

Keywords: pregnancy, planning for pregnancy, social environment, qualitative research, culture, Zimbabwe

Introduction

Globally, young women are facing higher risks of maternal mortality with pregnancy and childbirth complications being the leading cause of death among adolescent girls in developing countries (Conde-Agudelo, Belizán, & Lammers, 2005; Patton et al., 2009). Maternal risk factors are often established in adolescence with research showing that malnutrition in young girls can lead to stunting in adolescence and adulthood which in turn is a risk factor for maternal and child mortality (Bhutta et al., 2013a; Viner et al., 2012).

In Zimbabwe, where the maternal mortality ratio is high at 581 deaths per 100,000 live births, young women also face increased risk of maternal morbidity and mortality (ZIMSTAT, 2015). The median age of childbearing in Zimbabwe is 20.2 years, and 24% of adolescent females aged 15-19 years have begun childbearing (ZDHS, 2012). The leading causes of maternal mortality in Zimbabwe, accounting for 80% of all maternal deaths, are HIV/AIDS, pregnancy induced hypertension/eclampsia, postpartum hemorrhage, puerperal sepsis, and malaria (Munjanja, 2009). Maternal health has thus become an integral part of Zimbabwe's national health strategy, and current approaches to reducing maternal mortality focus on the pregnancy period with an emphasis on

antenatal care, obstetric care, and micronutrient supplementation during pregnancy. Although important, these approaches are not reaching a large number of women due to delayed or non-uptake of antenatal care, home deliveries, low adherence to micronutrient supplementation in pregnancy, and structural challenges within the healthcare system such as staff shortages (City of Harare, 2012; Darnton-Hill, 2012; Gadaga, Madzima, & Nembaware, 2009; Munjanja, 2009; ZDHS, 2012).

An emerging approach which has yet to be explored in Zimbabwe is implementing efforts to improve maternal health during the time before pregnancy. Pre-pregnancy health emphasizes that early prenatal care may already be too late, and as such, we need to intervene before a woman contemplates pregnancy or becomes pregnant (Atrash, Johnson, Adams, Cordero, & Howse, 2006). Pre-pregnancy care means any intervention that seeks to improve the health of a woman before pregnancy, and pre-pregnancy planning means any effort to modify or sustain a woman's positive health and health behaviors before pregnancy (Jack & Culpepper, 1990; Johnson et al., 2006). Both are integral to promoting pre-pregnancy health.

The importance of pre-pregnancy interventions to promote health among young women of childbearing age (14-24 years) has been emphasized, yet many young women in developing countries like Zimbabwe do not have access to pre-pregnancy care because little is understood about the concept of pre-pregnancy planning (Bhutta et al., 2013b; Dean et al., 2013; Draper et al., 2014; Hanson, Gluckman, Ma, Matzen, & Biesma, 2012; Sawyer et al., 2012; Viner et al., 2012). Furthermore, it is unknown which interventions will have the greatest impact on maternal outcomes of women in these countries.

An important step in understanding the feasibility and acceptability of pre-pregnancy efforts in improving maternal health is to explore the social environment related to pregnancy among this population. Social environmental influences on maternal health affect health behavior and change conditions beyond individual control (Cohen, Scribner, & Farley, 2000). Social environmental influences include social networks cultures, laws or policies that promote or prohibit behaviors, and media messages that are viewed regularly (Cohen et al., 2000). The social environment can function as a stressor or a stress buffer, or serve as an enabler of health behavior or as an impediment to healthy behavior (Stokols, 1996). Several theoretical frameworks such as McLeroy and colleagues' (1988) Socio-ecological Model of Health and Frieden's (2010) Health Impact Pyramid outline an increase in population impact among health efforts that address environmental influences, with a particular focus on the interrelatedness of social elements in an environment.

Social environmental influences on pregnancy-related practices and outcomes have been studied across the literature, yet few studies explore these influences qualitatively from the perspectives of young women's personal social networks and the larger social networks that exist within their communities (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Perkins, Subramanian, & Christakis, 2015). Valente (2010) defines social networks as "connections among people, organizations, political entities, (states or nations), and/or other units" (p. 3). These social networks serve as resources and sources of social support that could potentially contribute to these pregnancy-related practices and outcomes in addition to providing insight on the broader social environmental context (Collins et al., 1993; Perkins et al., 2015). The purpose of this

study was to explore the social environment related to pregnancy and planning for pregnancy from the perspectives of key community stakeholders in Harare, Zimbabwe and its influence on pregnancy-related decisions and practices.

Methods

Study Setting

Zimbabwe is located in southern Africa and has a population of 12,973,808 (48.1% males; 51.9% females) (Zimbabwe National Statistics Agency (ZIMSTAT), 2013). The research was conducted in Mabvuku and Kuwadzana, which are two high-density communities located in the outskirts of the capital city Harare which has the highest recorded rate of maternal mortality with 29% of the national maternal deaths (Munjanja, 2009; ZDHS, 2012). High-density suburbs are residential areas that are characterized by high population densities with residents having similar low-socioeconomic status. Mabvuku has a population of 47,154 and is located in the eastern part of the city while Kuwadzana has a population of 171,911 and is located in the western part of Harare (City of Harare, 2014). English is the official language of Zimbabwe and Shona is the predominant native language among Harare residents.

Design

A qualitative research design was used. Semi-structured in-depth interviews were conducted in both English and Shona by the principal investigator and a trained research assistant who were both fluent in English and Shona. The study sample included a purposive sample of 24 key community stakeholders and leaders that included 3 healthcare workers and administrators, 3 school teachers and administrators, 3 family

members of young women of child bearing age (14-24 years), and 3 community leaders (e.g. elders, religious leaders, community representatives) from each study community.

Procedure

A semi-structured interview guide, socio-demographic survey, and participant consent form were developed by the research team in English and translated into Shona. In developing the interview guide, the first author reviewed existing literature where similar qualitative methods were used to assess perspectives on pregnancy and reproductive health across varying populations. Research team members then reviewed and revised the interview questions as needed. The interview questions were open-ended to allow the participants to answer openly and interviewers followed the instructions highlighted in the interview guide (Roulston, 2010). Prior to data collection, interview questions were pre-tested with a small sample (2 interviews) of individuals who met the eligibility criteria of the intended audience, but who did not reside in the study communities. The research utilized purposive sampling and recruitment was conducted by the principal investigator and a trained research assistant and occurred at various locations within the study communities (such as churches, clinics, and schools) via fliers, snowball, and in-person recruitment. Participants chose the location of the interviews and all interviews were thus conducted in an office at the local clinic in each study community. Participants were screened for eligibility, and prior to participating they provided written consent. Interviews were between 45-60 minutes in length. The interviewers took detailed field notes during and immediately following the interviews to document various aspects of the environment of the interview (such as noise or interruptions), any additional observations, and the interviewer's opinions about the

overall quality of the interview. All participants received a US$5 incentive for participating in the study. Interviews were audio-recorded by the interviewers and transcribed verbatim then translated by professional translators and transcriptionists.

Ethical Considerations and Ethical Approval Mechanism

Approval to conduct the research was sought and received from the University of South Carolina institutional review board, City of Harare ethics committee, and the Medical Research Council of Zimbabwe prior to conducting any study activities.

Data Analysis

The transcribed and translated texts were analyzed thematically using NVivo 10 qualitative data analysis software to determine preliminary emergent codes and themes (Saldaña, 2013). The analysis was data driven (inductive) with no pre-determined codes. Rather, a codebook was developed with the initial emergent codes and was refined as data analysis progressed and saturation was reached. The principal investigator began by coding 8 interviews for emergent themes and the trained research assistant hand coded the same 8 transcripts independently. Coding from both the principal investigator and the research assistant were reviewed for comparisons and similarities and an initial codebook was developed. Another member of the research team reviewed the preliminary codebook and coded transcripts. Thereafter, the preliminary codebook was used to open code the remainder of the transcripts. The codebook was revised based on the additional coding until saturation was reached. Socio-demographic data were analyzed using SAS 9.3.

To ensure face and construct validity, we used interviewer triangulation to offset threats to validity inherent in using a single interviewer (Maxwell, 2004). The

triangulation validation strategy was also employed by using multiple data analysts to review the data. Interview results were member checked with a small sample (n=5) of the participants who participated in the interviews to ensure that information presented in the study results was congruent with the information participants provided (Guba & Lincoln, 1981; Lather, 1986). Study results were also submitted to the City of Harare and the Medical Research Council of Zimbabwe.

Results

Study results are presented according to sample characteristics and emergent social environment themes related to pregnancy and planning for pregnancy. Participant quotes are identified by participant type (i.e., healthcare worker, community leader), gender, and age.

Sample characteristics

Participants (N=24) had a mean age of 41 years (range 26–53 years), all were Black, most were females (75.0%), and of Shona ethnicity (91.6%). Most participants reported being in married-monogamous relationships (50.0%), had a high school education between Form 1-4 (equivalent to Grade 8-11) (25.0%), were Christian Protestant (37.5%), and were formally employed (75.0%) (Table 4.2). Participant roles included high-school teachers (n=6), registered nurse or midwives (n=4), community health worker (n=1), primary counselor (n=1), elected official (n=1), religious leaders (n=3), community health advocates (n=2), and family members of young women of child bearing age (n=6).

Table 4.2. Socio-demographic Characteristics of Study Participants (N=24)

Characteristic	**n(%)**
Age	
Mean Age (Years)	41
Age Range (Years)	26-53
Gender	
Female	18(75.0)
Male	6(25.0)
Race	
Black	24(100.0)
Ethnicity	
Shona	22(91.6)
Ndebele	1(4.2)
Chewa	1(4.2)
Marital Status	
Divorced or separated	4(16.7)
Married - Monogamous	12(50.0)
Never Married	4(16.7)
Widowed	4(16.7)
Education Level	
Primary (Grade 1-7)	1(4.2)
High school (Form 1-4)	6(25.0)
High school (Form 5-6)	1(4.2)
Certification	3(12.5)
Diploma	2(8.3)
Some College or University	5(20.8)
Bachelor's	5(20.8)
Graduate Degree	1(4.2)
Religious Affiliation	
Apostolic	1(4.2)
Catholic	5(20.8)
Muslim	1(4.2)
Protestant	9(37.5)
Pentecostal	8(33.3)
Main Source of Income	
Formally employed	18(75.0)
None	6(25.0)
Roles*	
Teacher	6(25.0)
Community Leader	6(25.0)
Healthcare Worker	6(25.0)
Family Member	6(25.0)
* High school teachers (n=6), registered nurse/midwives (n=4), community health worker (n=1), primary counselor (n=1), elected official (n=1), religious leaders (n=3), community advocates (n=2), and family members (n=6).	

The social environment related to pregnancy and planning for pregnancy

The social environment related to pregnancy and planning for pregnancy described by participants was deeply rooted in culture and cultural practices. The culture around pregnancy and planning for pregnancy described by study participants centered on four broad themes: Pregnancy importance, pregnancy silence, patriarchy, and community support in pregnancy. The following is a description of these themes.

Pregnancy importance

The importance of pregnancy was expressed in terms of the role of a woman in the community and the fulfillment of marriage. Participants spoke about pregnancy and more importantly, having a child or children, as strongly influencing the social status of a woman in the community. A healthcare worker described:

> Pregnancy is very important to a woman because through the pregnancy that's when she only becomes a parent and through the pregnancy that's when she can only be respected in the society, because in our society if you don't bear children you lose respect" (Healthcare worker, female, 45 years).

Another healthcare worker added:

> Pregnancy is important in the community or in her family. It is important to be labelled "*vane mwana, vane mwana*" (she has a child, she has a child), to get that respect than always to be asked, "*hausati wane mwana*" (you don't have a child yet?). You will have a sense of belonging and in a family you get that satisfaction that you now have your own family. (Healthcare worker, female, 50 years)

Pregnancy was also seen as important in fulfilling the act of marriage and was a cultural expectation in the confines of marriage. A teacher stated, "People expect that when a person is married she is expected to fall pregnant" (Teacher, female, 42 years). Delaying pregnancy within marriage was seen as a taboo. A community leader explained:

> People are expected to become pregnant as soon as they get married. That is what is expected from our culture that if a woman gets married, then she should be pregnant by 6 months and if they are not then they will be looked at as the one that has something wrong with them. They do not blame the man. (Community leader, male, 50 years).

Participants also described how pregnancy was not culturally accepted outside of marriage and particularly among young girls, with a teacher stating, "We were told not to fall pregnant when you are still young….One has to be mature and grown up" (Teacher, female, 45 years). Despite this belief, participants also described the reality of early pregnancies and early marriages with a teacher stating, "We come across early marriages, early pregnancies by children. In most cases it is children around Form 2 (age 14 years)" (Teacher, female, 45 years). Another teacher described the reasons for early marriage stating, "Some get married too early because of their families. The thinking is at least to get money to assist parents; some are just troublesome" (Teacher, female, 51 years). The practice of getting money (that the teacher was describing) is called brides price or "lobola", which is the money or resources given to the bride's family from the groom. Participants also described how the taboo with early pregnancy outside of marriage often leads to early marriages because if a young girl becomes pregnant her family will often take her to the home of the one responsible for impregnating her for marriage.

Participants outlined several negative social and health implications that came about with early marriages and early pregnancies. In terms of social implications, if a young girl becomes pregnant while she is still in school, she will no longer be able to continue with school, a common and enforced policy enacted in Zimbabwean schools. Participants also outlined negative health implications that came about with early marriage and early pregnancies with a healthcare worker stating, "Some may have

abortions or miscarriages especially among those who have early pregnancies. Also there are lots of STIs because of lack of knowledge" (Healthcare worker, female, 47 years).

Participants also expressed that although they thought it was important to plan for pregnancy, pregnancies in their communities were more likely to be unplanned. A teacher explained, "People don't plan for pregnancy these days. They just become pregnant. In most cases you hear that it was a mistake… in terms of family planning, people in the community they are not talking about it and they are not valuing it (Teacher, female, 30 years).

Pregnancy silence

Participants described the culturally-accepted silence around pregnancy. For example, a community leader explained, "When someone is pregnant they should not tell others about the pregnancy or they will be bewitched. They just keep quiet and you just see the child after they are delivered. She cannot share with others" (Community leader, female, 47 years). A healthcare worker added concerning community beliefs about pregnancy, "They believe that one can abort due to witchcraft and they think that if one is pregnant and is going to deliver, they should also not tell people around because they may have a still birth" (Healthcare worker, female, 45 years). As such, pregnant women were supposed to keep silent about their pregnancy for fear of being bewitched or experiencing negative pregnancy outcomes such as miscarriages or stillbirths.

Participants also described varying periods of pregnancy silence ranging from the first 3 months to the duration of pregnancy. A family member described, "Some say that when you become pregnant, you should not tell anyone about it because of those who could bewitch you. They are scared that they may be bewitched and you should not say

you are pregnant until it starts showing" (Family member, female, 40 years) while a teacher added, "You should keep quiet especially when the delivery time is approaching…otherwise the delivery can be stopped and you may not deliver the child" (Teacher, female, 51 years).

This culture of silence concerning pregnancy also emerged in participants' descriptions of pregnancy communication with young women. Central to their descriptions were how one should not talk to young women about pregnancy or planning for pregnancy because it will influence them to want to experiment and become pregnant. A healthcare worker stated, "Many of them think it's a taboo to talk about pregnancy to children" (Healthcare worker, male, 31 years) while another elaborated:

> If we consider our age of consent, if we say it is at 18 years, we can start teaching them at that age because if we start teaching them at an early age, if they keep hearing about family planning, they will develop an interest to know what exactly is it…If we start teaching children at 13 years old, they will become curious and…then they start experimenting wanting to know what exactly it is. If we talk about pregnancy to a 14 year old, sometimes we will have made a mistake. (Teacher, female, 45 years)

A healthcare worker acknowledged the cultural challenges with talking about contraception stating:

> Our culture is different from overseas because we are now just associating with use of condoms for HIV prevention. If we could encourage use of condoms for prevention of pregnancies although our culture does not like that but it is a fact that our children are indulging. If it could be accepted so that when they are educated, they will be informed of dual protection by the condom of both HIV and pregnancies. If it could be accepted in our culture to use the condoms, it could help reduce early pregnancies as well. However, it is difficult for our culture to accept use of condoms because it is believed you will be encouraging them to indulge and yet whether we like it or not they are indulging. I don't know what can be said in terms of the message. I think we could start by teaching the children about pregnancy. (Healthcare worker, female, 50 years)

Patriarchy

Participants described how the patriarchal culture of Zimbabwe plays a central role in pregnancy decision making, particularly in terms of pregnancy planning. When asked if it was possible to plan for pregnancy a teacher responded:

> That is challenging because if she is married a woman cannot. In our culture, the husband is the one with a say. He is the one who can decide to have a child or not to. From another angle, however, the woman has control because I can simply hide the pills (birth control) and take the pills. So I am the one also controlling (laughs). I am the one controlling, but generally it is said the husband is the one in control of the family. (Teacher, female, 42 years)

In terms of who was responsible for making decisions about planning a pregnancy, a healthcare worker explained, "Considering the culture they usually think that it is the responsibility of the man…the man has got the last say about the issue of pregnancy" (Healthcare worker, female, 36 years). Most study participants stated that both the partner and the woman should be responsible for making pregnancy decisions, although some acknowledged that this did not take place in the community. Participants described how they thought that women should take a more equal position in terms of pregnancy decision-making with a family member stating:

> The value that the community should place on a woman should be at par with the males...She is someone who is industrious, she is someone who is self-reliant. She is there to keep the family going…She is the heart and the sole of the family. She should be treated the same with her husband. (Family member, male, 27 years)

In addition to the strong patriarchal culture around pregnancy decision making, participants also described how men were not as involved in pregnancy care. A healthcare worker explained, "The other challenge is the male involvement because these young women whether married or single, especially when married will need that support. Men are a problem in terms of assisting and giving whatever necessary support on

whatever program" (Healthcare worker, female, 50 years). Pregnancy care programs described by participants that lacked male involvement or support included antenatal care and prevention of mother to child transmission of HIV.

Community support in pregnancy

Despite participant's descriptions of the silence surrounding pregnancy, they also described the community focus around pregnancy where they viewed community involvement as integral to ensuring a healthy pregnancy. When describing whose responsibility it was to ensure a healthy pregnancy, a healthcare worker explained:

> This involves a lot of people. We start from the beginning with the pregnant person and her partner if there is one or just herself if there is no partner. Then we include the family, they are supposed to make sure of the comfort of the pregnancy as they live with her. That's our culture, making sure how she is. Then sometimes the church, to give that spiritual support is healthy if she believes. Sometimes she will hear things that will assist her in her condition, giving her peace of mind. Next we go to the health institutions, including all the health personnel, doctors, nurses, general hand, all play an important role…Also friends play a big role. (Healthcare worker, female, 50 years)

Specific family members described who were integral in ensuring a healthy pregnancy included mothers, aunts (usually the sisters of women's fathers) who are referred to as "Tete", grandmothers and mothers-in-law.

The extra care provided to pregnant women by the community was further described by a family member who said:

> When a woman is pregnant, she is treated with care. She should be someone, she is someone that is fragile and everyone respects her because…she is like a nation builder. She is keeping and is there for continuity of our generations. Generations can't continue without her. So a woman is vital for the continuity of a nation...We as the community are there to support her, because when she faces social problems, for instance when the husband is not treating her well even the family and relatives, we are making a negative impact on the baby. So we as a community, we are there to support her during the time of pregnancy. (Family

member, male, 27 years)

Discussion

This study explored the social environment related to pregnancy and planning for pregnancy from the perspectives of key community stakeholders in Harare, Zimbabwe and its influence on pregnancy-related decisions and practices. The social environment related to pregnancy and planning for pregnancy described by participants was deeply rooted in culture and cultural practices. Mazrui (1986) defines culture as "a system of interrelated values active enough to influence and condition perception, judgment, communication, and behavior in a given society" (as cited in Airhihenbuwa & Webster, 2004, p. 5). Airhihenbuwa and colleagues (2013) propose that culture shapes the construction of personal understandings of health and illness and is normalized by influencing health perceptions and health seeking practices. Participants described the culture around pregnancy centering on four broad themes: Pregnancy importance, pregnancy silence, patriarchy, and community support in pregnancy. The importance of pregnancy in Zimbabwean culture has also been documented in the literature with pregnancy being positively viewed in the confines of marriage and viewed as a cultural symbol of maturity for both husband and wife (Murira, Lützen, Lindmark, & Christensson, 2003).

Participants' belief that young girls should not become pregnant is in contrast to national statistics that suggest practices to the contrary. National data reveal that there are a high number of early pregnancies and marriages in the country, which result in negative health and social implications such as increased HIV risk and discontinued education. A 2014 Zimbabwe Multiple Indicator Cluster Survey by Zimbabwe's National Statistics

Agency, found that one in three women ages 20 to 49 surveyed reported that they married before age 18 with an estimated 4% marrying before age 15 which highlights the prevalence of early marriages in the country (ZIMSTAT, 2015). At the time the interviews were conducted, early marriages were permissible under Zimbabwe's Customary Marriages Act which set no minimum age for marriage, while the Marriage Act, which governs monogamous marriages, stated that girls under 16 cannot marry without the written consent of the justice minister (Human Rights Watch, 2015). A few months following the interviews, the Zimbabwean constitutional court outlawed marriages to minors under the age of 18 years; this law may not be effectively enforced, however, since most child marriages in the country are unregistered customary law unions (Human Rights Watch, 2015).

The silences around pregnancy found in this study was also documented by Mutambirwa (1984) who addressed how conception, pregnancy, and labor are matters not readily and openly discussed outside the family. Our study also found that this pregnancy silence extends to education about pregnancy, particularly among young women of child bearing age, which participants considered taboo because of their perceptions of its potential to encourage young women to engage in sexual activity. The silence around pregnancy also presents questions to health professionals about how to talk to young women in this context about pregnancy or accessing reproductive health care services, when there is this culture of silence surrounding pregnancy.

The patriarchal culture around pregnancy presented in this study was also found by Murira and colleagues (2003) who described how men in Zimbabwe mostly control women's fertility by deciding the number of children in a family. Another study

conducted in Harare, Zimbabwe which explored women's and health workers' perspectives of sexuality and sexual violence in pregnancy found that participants perceived that women had less decision making power than their partners in terms of their reproductive health and timing of pregnancy; factors which may impact their ability to plan for pregnancy (Shamu, Abrahams, Temmerman, Shefer, & Zarowsky, 2012). Empowerment of women is a key theme of current global maternal health efforts and our study results point to a need to strengthen these empowerment efforts among women in Zimbabwe, in addition to improving male involvement in pre-pregnancy and pregnancy care, which has been shown to increase institutional deliveries, skilled birth attendance, and uptake of postnatal services (Aguiar & Jennings, 2015).

A study limitation is that friends or peers of adolescent girls and young women were not included in the study and their missing perspectives could potentially have added more insight into the structural environment related to pregnancy and planning for pregnancy. Another study limitation is how study data were collected from participants in two communities in Harare and may not include the cultural perspectives of all in Harare. Study results do, however, represent views from various participants with varying roles within the study communities and who could describe the social environment related to pregnancy and planning for pregnancy at multiple levels.

Conclusions

This research study adds to our understanding of the social environment related to pregnancy and planning for pregnancy from the perspectives of key community stakeholders in Harare, Zimbabwe and how these social environmental perspectives

inform pregnancy-related decisions and practices. Culture and cultural practices strongly influenced pregnancy views and practices, and efforts to improve pregnancy and pregnancy-related outcomes should acknowledge these cultural influences. Potential maternal health targets could include addressing the culture of silence around pregnancy to improve reproductive health communication, empowering women to be partners in the pregnancy decision-making process and realize their potential to contribute to favorable pregnancy outcomes, and including women's immediate and extended social networks in pregnancy efforts. These approaches, conducted during the pre-pregnancy, pregnancy, and post-pregnancy periods, could contribute to improving maternal health in Zimbabwe by improving reproductive health communication and maternal health seeking behaviors in addition to encouraging women's contribution to pregnancy decision-making.

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CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

5.1 Summary of Major Findings

The dissertation research applied a participatory, holistic approach, to bridge the knowledge gap around pre-pregnancy planning in Zimbabwe. We worked collaboratively with adolescent girls and young women (14-24 years) and key stakeholders to inform the development of a pre-pregnancy planning intervention with the hope of improving overall maternal and child health in Zimbabwe. The research was guided by three specific aims. The following is a summary of findings for each aim.

Specific Aim 1 took an emic approach (Pelto & Pelto, 1978) to understand and describe how adolescent girls and young women (14-24 years) in Harare conceptualize pregnancy and planning for pregnancy, and how the aforementioned conceptualizations inform decisions about pregnancy and planning for pregnancy.

Research Question 1: How do adolescent girls and young women (14-24 years) in Harare, Zimbabwe conceptualize pregnancy and planning for pregnancy?

Research Question 2: How do conceptualizations of pregnancy and planning for pregnancy among adolescent girls and young women (14-24 years) influence their decisions around pregnancy and planning for pregnancy?

Results for this specific aim are presented in manuscript 1, *Understanding Conceptualizations of Pregnancy and Planning for Pregnancy among Adolescent Girls*

and Young Women in Harare, Zimbabwe. Adolescent girls and young women's conceptualizations of pregnancy focused on the social aspects of pregnancy and had less to do with biomedical descriptions of pregnancy. Pregnancy was conceptualized across 8 themes: carrying a child, motherhood, the best time for pregnancy, pregnancy decision makers, who is responsible for the pregnancy, pregnancy burden, pregnancy dangers, and increase in social status with pregnancy. Participants weren't empowered enough to think that decisions they make could positively impact their pregnancy outcomes. Instead, they left decision-making related to pregnancy to their partners, healthcare workers and family. This deferment of pregnancy decision-making to others points to the importance of these social networks in these adolescent girls and young women's reproductive health and the need to include these social networks in approaches to improve pregnancy outcomes among this population. It also points to a need to empower young women to realize that they potentially have an impact on the positive outcome of a pregnancy.

The study also highlighted a differing view from the literature on planning for pregnancy where planning for pregnancy described by participants begins in early adolescence and does not simply focus on the time before pregnancy but also includes the pregnancy and post-pregnancy periods. Planning for pregnancy also varied based on whether a person was married or not married and understandings of what it actually meant to "plan a pregnancy" were less evident among adolescent participants aged 14-17 years.

Specific Aim 2 was to understand and describe the structural environment related to pregnancy and planning for pregnancy in Harare, Zimbabwe and its influences on

pregnancy-related decisions and practices.

Research Question 3: What is the structural environment related to the pre-pregnancy period and pregnancy?

Research Question 4: How do elements of the structural environment impact pre-pregnancy planning?

Results for this specific aim are presented in manuscript 2, *Understanding the Social Environmental Influences on Pregnancy and Planning for Pregnancy in Harare, Zimbabwe,* and in Appendix H. Manuscript 2 described the social environment related to pregnancy and planning for pregnancy and how it influences pregnancy-related decisions and practices from the perspectives of key community stakeholders. Appendix H describes the physical environment and its influences. The social environment related to pregnancy and planning for pregnancy described by participants was deeply rooted in culture and cultural practices. Participants described the culture around pregnancy centering on four broad themes: Pregnancy importance, pregnancy silence, patriarchy, and community support in pregnancy. The importance of pregnancy was expressed in terms of the role of a woman in the community and the fulfillment of marriage, with an increase in social status with pregnancy. Participants described pregnancy silence related to fear of negative pregnancy outcomes due to witchcraft. Pregnancy silence also extended to education about pregnancy, particularly among adolescent girls and young women, which participants considered taboo because they expressed that it had potential to encourage adolescent girls and young women to engage in sexual activity. This pregnancy silence also presents questions to health professionals about how to talk to women about pregnancy or accessing reproductive health care services when there is this

culture of silence surrounding pregnancy.

Study results underscore a level of dissonance between participants' belief that young girls should not become pregnant and national statistics that suggest practices to the contrary. National data reveal that there are a high number of early pregnancies and marriages in the country, which result in negative health and social implications such as increased HIV risk and discontinued education. It is important to note that a few months following the interviews, the Zimbabwean constitutional court outlawed marriages to minors under the age of 18 years; however, this law may not be as effective or be effectively enforced since most child marriages in the country are unregistered customary law unions. Study results also point to a patriarchal society where men have pregnancy decision making power. In addition, strong social networks were identified as influential in ensuring a healthy pregnancy.

The physical environment related to pregnancy and planning for pregnancy described by participants was limited in programming targeting adolescent girls and young women and among those that described available programs, these centered on HIV prevention and testing and few programs addressed nutrition or pregnancy outside of ANC. Programs targeting adolescent girls and young women described by participants fell into four main categories: clinic programs, school programs, community programs, and church programs.

Clinic programs centered on ANC for pregnant women, a Health Center Committee that advocated for an expansion of one of the study community clinics, an adolescent corner within one of the study community clinics, and a nutritional garden. School programs centered on Guidance and Counseling classes offered in some high

schools where students were taught about sexual reproductive health, although participants acknowledged that these teachings were not in depth since they feared that they would encourage sexual behavior among the students. Community programs were often conducted by community health workers who provide health education to the community and conduct home visits to identify those that need to access the health care system. Church programs tended to target varying issues such as physical activity, nutrition, life-skills mentorship, and HIV prevention. Programs in churches also included guest lectures from health workers. Participants described program challenges including staff shortages, high cost of health services, delayed or non-access of ANC services, and lack of targeted community programming.

Specific Aim 3 was to work collaboratively with adolescent girls and young women (14-24 years) with or without a previous or current pregnancy, healthcare workers, and partners of adolescent girls and young women to: 1) develop intervention protocol guidelines for a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe; 2) identify essential components of the intervention; 3) identify who, where, and when to potentially implement the intervention; and 4) identify potential channels for delivery of the intervention.

Research Question 5: What are participants' views concerning specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe and the preferred methods for delivering the intervention?

Results for this specific aim are presented in Appendix I with socio-demographic

results presented in Table 5.1 below.

Sample Characteristics

Adolescent Girls and Young Women

The mean age of the sample was 18 years (range 14–24 years), and all were Black females of Shona ethnicity. Most adolescent girls and young women were never married (71.8%), had a high school education between Form 1-4 (Grade 8-11) (95.3%), were Christian Protestant (38.8%), were dependent on their partner or family for income (89.4%), did not have a prior pregnancy (71.8%), did not have children (74.1%), and were not currently pregnant (92.9%) (Table 5.1).

Healthcare Workers

The mean age of the sample was 34 years (range 22–68 years), and all were Black females of Shona ethnicity. Most healthcare workers were in married monogamous relationships (65.6%), had some college or university education (37.5%), were Christian Pentecostal (34.4%), were formally employed (100.0%) as a midwife (21.9%), and had worked in their healthcare worker position for on average 6 years (Table 5.1).

Partners

The mean age of the sample was 27 years (range 17-36 years), and all were Black males of Shona ethnicity. Most partners of adolescent girls and young women (14-24 years) were in married monogamous relationships (76.5%), had a high school education between Form 1-4 (Grade 8-11) (64.7%), were Christian Pentecostal (29.4%), and had no source of income (52.9%) (Table 5.1).

Table 5.1. Socio-demographic Characteristics of Focus Group Participants (N=134)

	Adolescent Girls and Young Women (n=85)	**Healthcare Workers (n=32)**	**Partners (n=17)**
	n (%)	**n (%)**	**n (%)**
Characteristic			
Age			
Mean Age (Years)	18	34	27
Age Range (Years)	14-24	22-68	17-36
Gender			
Female	85(100.0)	32(100.0)	0(0)
Male	0(0)	0(0)	17(100.0)
Race			
Black	85(100.0)	32(100.0)	17(100.0)
Ethnicity			
Shona	85(100.0)	32(100.0)	17(100.0)
Marital Status			
Divorced or separated	4(4.7)	3(9.4)	0(0)
Married – Monogamous	19(22.4)	21(65.6)	13(76.5)
Married – Polygamous	1(1.2)	0(0)	0(0)
Never Married	61(71.8)	4(12.5)	4(23.5)
Widowed	0(0)	4(12.5)	0(0)
Education Level			
Primary (Grade 1-7)	3(3.5)	1(3.1)	0(0)
High school (Form 1-4)	81(95.3)	6(18.8)	11(64.7)
High school (Form 5-6)	1(1.2)	1(3.1)	5(29.4)
Certification	0(0)	3(9.4)	0(0)
Diploma	0(0)	1(3.1)	0(0)
Some College or University	0(0)	12(37.5)	0(0)
Bachelor's	0(0)	8(25.0)	1(5.9)
Religious Affiliation			
Apostolic	10(11.8)	4(12.5)	0(0)
Catholic	17(20.00)	9(28.1)	5(29.4)
Muslim	0(0)	1(3.1)	0(0)
Protestant	33(38.8)	3(9.4)	4(23.5)
Pentecostal	22(25.9)	11(34.4)	5(29.4)
Traditional	0(0)	0(0)	2(11.8)
Other	3(3.5)	4(12.5)	1(5.9)
Main Source of Income			
Formally employed	0(0)	32(100.0)	8(47.1)
Self-employed	5(5.9)	0(0)	0(0)
Dependent on partner/family	76(89.4)	0(0)	0(0)
None	4(4.7)	0(0)	9(52.9)

Position			
Clinic Orderly	-	1(3.1)	-
Counsellor	-	2(6.3)	-
Health Promoter	-	2(6.3)	-
Midwife	-	7(21.9)	-
Registered Nurse and Midwife	-	6(18.8)	-
Student Nurse	-	3(9.4)	-
Number of Years in Position			
Average	-	6 years	-
Range	-	2 months-35 years	-
Prior Pregnancies			
Yes	24(28.24)	-	-
No	61(71.76)	-	-
Children			
Yes	22(25.9)	-	-
No	63(74.1)	-	-
Currently Pregnant			
Yes	6(7.1)	-	-
No	79(92.9)	-	-

Research Question 5: What are participants' views concerning specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe and the preferred methods for delivering the intervention?

The initial age of introducing pre-pregnancy health efforts to adolescent girls and young women varied across participants with some participants requesting efforts targeting girls aged 12 years and some requesting efforts beginning in late-adolescence. These varying views were driven by participants' concern that talking with young girls about pregnancy would encourage them to engage in sexual activity. This concern also extended to contraception education and availability to adolescent girls and unmarried young women. Despite these varying views, most participants acknowledged the importance of pre-pregnancy health and supported the development of pre-pregnancy

efforts that were age appropriate to improve the health of adolescent girls and young women before pregnancy.

Pre-pregnancy topics

Specific topics that participants described as potentially being addressed by pre-pregnancy efforts were based on three categories: specific health conditions, health behaviors, and social issues (Table 5.2). Health conditions that participants described as potentially being addressed to improve the health of adolescent girls and young women before pregnancy included HIV/AIDS, STIs, stress, and anemia. Health behaviors included preventing substance abuse (drugs and alcohol), healthy eating, accessing health services not only when sick, hygiene, prevention of early sex and early marriage, prevention of risky sexual behavior, testing for HIV, and prevention of smoking. Social issues included education on pregnancy, the transition from childhood to adolescence to adulthood, prevention of physical, verbal and sexual abuse, talent nurturing, parent and child reproductive health communication, and empowerment of adolescent girls and young women.

Table 5.2. Potential Pre-pregnancy Topics

Pre-pregnancy Topics		
Health Behaviors	**Health Conditions**	**Social Issues**
1. Accessing health services not only when sick	1. Anemia	1. Empowerment of adolescent girls and young women
2. Healthy eating	2. HIV/AIDS	2. Parent and child reproductive health communication
3. HIV testing	3. Sexually Transmitted Infections (STIs)	3. Pregnancy education
4. Hygiene	4. Mental health (Stress)	4. Prevention of physical, verbal and sexual abuse
5. Prevention of early sex and early marriage		5. Talent nurturing and skills building

6. Prevention of risky sexual behavior		6. Transition from childhood to adolescence to adulthood
7. Prevention of smoking		
8. Prevention of substance abuse (drugs and alcohol)		

Duration and timing of pre-pregnancy efforts

All participants wanted efforts that were concise, about 1 hour in length, in order to keep participants engaged. These efforts could mostly be conducted monthly or based on the school terms (once every 3 months).

Location of pre-pregnancy efforts

Location of pregnancy efforts could vary depending on the specific age groups being targeted. If school aged girls are being targeted, participants described how efforts could be conducted in schools. Adolescent girls and young women participants who were out of school preferred programs conducted at clinics, community halls, or churches. Since mobile phones were prevalent among the study population, participants also described the use of mobile technology to conduct pre-pregnancy efforts.

Recruitment

Participants described varying recruitment methods including audio tracks advertising via the radio, awareness campaigns, government backing, healthcare worker outreach, incentives, pamphlets, posters, and stickers on commuter omnibuses or combis (local public transportation).

Facilitators of pre-pregnancy efforts

Participants preferred facilitators of pregnancy efforts to be knowledgeable and experienced females or peers. Nurses were also specifically identified as favorable

facilitators.

Types of pre-pregnancy efforts

Participants described various efforts that can be implemented to improve the health of adolescent girls and young women before pregnancy. These efforts were described across 10 themes: Clinic programs, community outreach, edutainment (the use of media and education), empowerment of adolescent girls and young women, men or partner targeted programs, parental involved or targeted programs, peer education, school programs, technology programs, and youth friendly environments (Table 5.3).

Table 5.3. Types of Pre-pregnancy Efforts

Types of Pre-pregnancy Efforts	
Clinic programs	• Improve or build physical health structures • Reduced health service fees • Clinic nutrition education days
Community outreach	• Health promoter outreach • Recreation programs • Counseling education
Edutainment	• Musical performances by entertainers • Talk shows • Educational books • Radio programming • Road shows
Empowerment of adolescent girls and young women	• Education (academic) • Skills building, training, and workshops • Income generating activities • Recreation programs
Men or partner targeted programs	• Pregnancy information
Parental involved or targeted programs	• Parent-child reproductive health communication
Peer education	• Video testimonials • Support groups • Group discussions • Camps
School programs	• Guidance and Counseling • Collaboration between healthcare workers and teachers for health

	programs • Resident nurse educators in schools • Reproductive health and school curriculum integration • School Health Education Days
Technology	• Mobile health education
Youth friendly environments	• Youth Friendly Corners in health facilities • Youth friendly groups in schools and churches

Research Question 6: What are participants' views concerning best practices for pre-pregnancy planning?

Ensuring pre-pregnancy effort effectiveness

Participants described what could potentially make these pre-pregnancy efforts effective is having community support, evaluating effectiveness of pre-pregnancy efforts, involving men or partners and parents of adolescent girls and young women, peer education, separating targeted age groups to provide age appropriate health education, distributing tangible resources, training educators and facilitators, providing transportation to programs, and providing certificates of completion. Resources requested by participants for pre-pregnancy efforts included incentives (i.e. cash, bicycles, t-shirts), jobs, money to develop, implement and evaluate these efforts, and print resources such as information packets.

Best practices for pre-pregnancy planning

According to participants, pre-pregnancy planning efforts should:

- Involve target groups in development and implementation of pre-pregnancy programs.
- Provide an integrated approach to pre-pregnancy health with collaboration of key

community stakeholders.

- Acknowledge the strong social ties within communities and their influence on pregnancy-related decisions and practices, and involve social networks and have social network targeted efforts.
- Acknowledge the cultural influences on pregnancy and planning for pregnancy.
- Provide age appropriate information and separate targeted populations by gender and age groups (i.e. 14-17 year olds, 18-20 year olds).
- Address not only specific health conditions and behaviors that affect adolescent girls and young women, but social issues that impact health such as empowerment of adolescent girls and young women, early marriages, and gender-based violence.
- Utilize existing resources to reduce costs. For example, improving existing Guidance and Counseling curriculums in schools to provide pre-pregnancy information, and using existing community centers, clinics, and churches as locations for pre-pregnancy efforts.
- Implement concise and informative approaches that are about 1 hour in length and recur monthly or every three months.
- Utilize creative and entertaining methods to keep participants engaged such as edutainment and mobile technology.

5.2 Public Health Significance

The dissertation research is significant because of the high maternal mortality in Zimbabwe, the potential to bridge the knowledge gap around pre-pregnancy planning in

Zimbabwe, the targeting of adolescent girls and young women (14-24 years), the exploration of structural environmental influences on pregnancy and pre-pregnancy planning, and the shift from treatment to prevention in maternal health efforts. Zimbabwe's maternal mortality ratio is high at 581 deaths per 100,000 live births, with the capital city, Harare, having the highest recorded rate of maternal mortality at 29% (Munjanja, 2009; ZIMSTAT, 2015). As a result, the research addressed a critical public health problem.

Many adolescent girls and young women in developing countries like Zimbabwe do not have access to pre-pregnancy care, and little is known about how pre-pregnancy planning interventions can be implemented among women in these countries (Dean et al., 2013; Draper et al., 2014). The research presented an opportunity to obtain an understanding of the conceptualizations and structural environment for improving pre-pregnancy planning for adolescent girls and young women in Zimbabwe, in addition to providing information for the development of a pre-pregnancy planning intervention to improve overall maternal and child health.

The research targeted adolescent girls and young women (14-24 years) who have an increased risk of maternal morbidity and mortality. The research also addressed key structural environmental factors that can facilitate or hinder maternal health efforts, taking into account how culture plays a role in establishing the social norms concerning pregnancy in Zimbabwe.

Currently, interventions to reduce maternal mortality in Zimbabwe focus on the pregnancy period with an emphasis on antenatal care, micronutrient supplementation during pregnancy, and obstetric care. Although important, these intervention efforts are

not reaching a large number of women due to delayed or non-uptake of antenatal care, home deliveries, low adherence to micronutrient supplementation in pregnancy, and structural challenges within the healthcare system such as staff shortages (City of Harare, 2012; Darnton-Hill, 2012; Gadaga et al., 2009; MOHCC, 2014; Munjanja, 2009; ZDHS, 2012). As such, the dissertation research explored ways to intervene during the pre-pregnancy phase to improve overall maternal and child health outcomes.

5.3 Study Limitations

The study has its limitations. The first is that study results may potentially not be generalized to other areas in Harare; however, Morse (1999) posits that although qualitative data is collected from a purposive sample, it could be generalized to any setting in which the topic is of concern. In addition, the dissertation research is an important step in assessing and documenting conceptualizations of pregnancy and planning for pregnancy, the structural environment related to pregnancy and planning for pregnancy and best practices for pre-pregnancy efforts. For specific aim 2, friends of adolescent girls and young women were not included in the study and their missing perspectives could potentially have added more insight into the structural environment related to pregnancy and planning for pregnancy.

5.4 Conclusion and Implications for Future Research

The dissertation research adds to our understanding of 1) pregnancy and planning for pregnancy from the perspectives of adolescent girls and young women (14-24 years) in Harare, Zimbabwe and how the aforementioned perspectives inform decisions about

pregnancy and planning for pregnancy, 2) the structural environment related to pregnancy and planning for pregnancy in Harare, Zimbabwe from the perspectives of key community stakeholders in Harare and its influences on pregnancy-related decisions and practices, and 3) participants' views concerning specific pre-pregnancy topics that will be addressed through a pre-pregnancy intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe and the preferred methods for delivering the intervention, in addition to best practices for pre-pregnancy planning.

Results of this research point to the strong social ties that adolescent girls and young women have with their social networks and how efforts to improve pregnancy and pregnancy-related outcomes should address and include these social networks in addition to the socio-cultural views concerning pregnancy expressed by research participants. The research also highlighted a differing view from the literature on planning for pregnancy where planning for pregnancy begins in early adolescence and does not simply focus on the time before pregnancy but also includes the pregnancy and post-pregnancy periods. As such, more studies are needed to understand women's perspectives on pregnancy and also what it really means to "plan for pregnancy" to improve the effectiveness of efforts to improve pregnancy outcomes and overall maternal and child health in developing countries like Zimbabwe.

This research describes a social environment related to pregnancy that is strongly influenced by culture and how efforts to improve pregnancy-related outcomes should acknowledge these cultural factors. Potential maternal health targets could include addressing the culture of silence around pregnancy to improve reproductive health communication, empowering women to be partners in the pregnancy decision making

process and realize their potential to contribute to favorable pregnancy outcomes, in addition to including women's social networks in pregnancy efforts.

The dissertation research complemented existing efforts to improve maternal health in Zimbabwe by exploring the pre-pregnancy period as a potential avenue to improve maternal health with the hope that coordinated efforts before, during, and after pregnancy will result in improved maternal and child morbidity and mortality. The results of this research will be used to guide the development of pre-pregnancy health efforts in Zimbabwe that address pre-pregnancy health targets identified through existing evidence and participatory approaches, with an emphasis on prevention, community involvement, acknowledging the cultural influences on pregnancy, empowerment of adolescent girls and young women, and facilitating informed decision-making to improve pre-pregnancy health.

Pre-pregnancy approaches in Zimbabwe have the potential to reach more adolescent girls and young women with important pregnancy-related information and resources to better equip them should they decide to become pregnant in the future. These approaches could be cost-effective and reduce burden on a strained healthcare system if they incorporate community-based pre-pregnancy efforts and focus on care of women and prevention of maternal illnesses. A key strength of this research is that it garnered a spectrum of views through a participatory approach so that our target group could be invested in and empowered through collaboratively developing approaches to improve their health. Since Zimbabwe currently has no national policy, nor do standard tools exist, for the delivery of pre-pregnancy care services, this research could potentially provide

some foundational information in developing policies and resources around pre-pregnancy health in the future.

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APPENDIX A – STUDY FLIERS

The following are the study flyers used to recruit participants for specific aim 1-3 in both English and Shona.

Are you a female aged 14-24 years who lives in Mabvuku or Kuwadzana?

We want to hear from you!

You are invited to participate in a research study where you will be interviewed for 45-60 minutes about your views on nutrition and pregnancy.

The title of the study is "Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe".

Accepting participants June 1 - August 31, 2015.

For more information, please call Chiwoneso at 0779733225 or visit Mabvuku or Kuwadzana Maternity Clinics

Muri munhukadzi ane makore ekuberekwa ari pakati pe14-24 years anogara kuMabvuku kana kuti kuKuwadzana here?

Tinoda kunzwa kubva kwamuri!

Muri kukokwa kuti mupinde mutsvakurudzo yamuchabvunzwa pfungwa dzenyu maererano nekudya kunovaka muviri nekuva nepamuviri kwemaminitsi ari pakati pemakumi mana nemashanu nemakumi matanhatu.

Tsvakurudzo rinonzi “Kunzwisisa maererano nezvingaitwa pakuvandudza utano hwevanhukadzi vechidiki vari pazera rekuita vana vasati vaita pamuviri muHarare, Zimbabwe”.

Kutambira vachava mutsvakurudzo, kubva musi wa1 Chikumi kusvika 31 Nyamavhuvhu, 2015.
Kana muchida rumwe ruzivo, munokurudzirwa kufonera Chiwoneso pa0779733225 kanakuti endai kuMabvuku kana kuKuwadzana Maternity Clinics

Do you live or work in Mabvuku or Kuwadzana?

We want to hear from you!

We are inviting either of the following men and women to participate in a research study where you will be interviewed for 45-60 minutes about your views on nutrition and pregnancy:

- ✓ **Healthcare worker** (nurse, midwife, community health worker, etc.)
- ✓ **Teacher or administrator**
- ✓ **Family member of a female aged 14-24 years**
- ✓ **Community leader** (pastor, elder, representative, etc.)

The title of the study is "Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe".

Accepting participants June 1 - August 31, 2015.

For more information, please call Chiwoneso at 0779733225 or visit Mabvuku or Kuwadzana Maternity Clinics.

Munogara kana kuti kushanda kuMabvuku kana kuti kuKuwadzana here?

Tinoda kunzwa kubva kwamuri!

Tiri kukoka vanhurume nevanhukadzi vari mune chimwe chezvikwata zvinotevera kuti vapinde mutsvakurudzo yavachabvunzwa pfungwa maererano nekudya kunovaka muviri nekuva nepamuviri kwemaminitsi ari pakati pemakumi mana nemashanu nemakumi matanhatu:

- ✓ **Mushandi wezveutano** (mukoti, nyamukuta, mushandi wezveutano munharaunda, nevamwewo)
- ✓ **Mudzidzisi kana kuti mukuru mukuru**
- ✓ **Nhengo yemhuri yemunhukadzi ane makore ekuberekwa ari pakati pe14-24 years**
- ✓ **Mutungamiriri wevanhu munharaunda** (mufundisi, munhu ane chinzvimbo chikuru muchechi, mumiriririri, nevamwewo)

Tsvakurudzo rinonzi “Kunzwisisa maererano nezvingaitwa pakuvandudza utano hwevanhukadzi vechidiki vari pazera rekuita vana vasati vaita pamuviri muHarare, Zimbabwe”.

Kutambira vachava mutsvakurudzo, kubva musi wa1 Chikumi kusvika 31 Nyamavhuvhu, 2015. Kana muchida rumwe ruzivo, munokurudzirwa kufonera Chiwoneso pa0779733225 kanakuti endai kuMabvuku kana kuKuwadzana Maternity Clinics

Do you live or work in Mabvuku or Kuwadzana?

We want to hear from you!

We are inviting either of the following men and women to be in a research study where you will participate in a 60 minute group discussion about your views on nutrition and pregnancy:

- ✓ **Female aged 14-24 years**
- ✓ **Healthcare worker** (nurse, midwife, community health worker, etc.)
- ✓ **Partner of a female aged 14-24 years**

The title of the study is "Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe".

Accepting participants October 1, 2015-January 31, 2016.

For more information, please call Chiwoneso at 0779733225 or visit Mabvuku or Kuwadzana Maternity Clinics.

Munogara kana kuti kushanda kuMabvuku kana kuti kuKuwadzana here?

Tinoda kunzwa kubva kwamuri!

Tiri kukoka vanhurume nevanhukadzi vari mune chimwe chezvikwata zvinotevera kuti vapinde mutsvakurudzo yavachabvunzwa pfungwa maererano nekudya kunovaka muviri nekuva nepamuviri kwemaminitsi ari pakati pemakumi mana nemashanu nemakumi matanhatu:

- ✓ **Munhukadzi ane makore ekuberekwa ari pakati pe14-24 years**
- ✓ **Mushandi wezveutano** (mukoti, nyamukuta, mushandi wezveutano munharaunda, nevamwewo.),
- ✓ **Mudikanwi wemunhukadzi ane makore ekuberekwa ari pakati pe14-24 years**

Tsvakurudzo rinonzi “Kunzwisisa maererano nezvingaitwa pakuvandudza utano hwevanhukadzi vechidiki vari pazera rekuita vana vasati vaita pamuviri muHarare, Zimbabwe”

Kutambira vachava mutsvakurudzo, kubva musi wa1 Gumiguru, 2015 kusvika 31 Ndira, 2016. Kana muchida rumwe ruzivo, munokurudzirwa kufonera Chiwoneso pa0779733225 kanakuti endai kuMabvuku kana kuKuwadzana Maternity Clinic

APPENDIX B – SEMI-STRUCTURED INTERVIEW GUIDE

The following is the interview guide used to collect data for the semi-structured interviews.

Young Women Interview Questions (English)

Now, we have the interview. There are a total of 31 questions. I will read each question to you and allow you the opportunity to answer. You may skip any question that you may not want to answer. All responses are confidential and only represent your opinions. Please feel free to ask me if you have any questions. If you have no questions at this time, we will begin.

Family

I would like to start by hearing your thoughts about family.

1. When you think about family, what comes to mind?
    a. Describe your family.
    b. How do your family members play a role in your life?
    c. If you get married, how do you hope your family structure will look? ***(If they are 14-17 years or 18-24 years and unmarried)***
    d. How do you describe your current family structure? ***(For those who already have children)***

Health

With this next set of questions, I will ask your thoughts about health.

2. What does health mean to you as a young woman?

a. What things make you healthy?

b. What things prevent you from being healthy?

c. How important is what you eat in terms of your health?

Conceptualizations of Nutrition

With this next set of questions, I will ask your thoughts about food and nutrition.

3. Describe what you normally eat on a daily basis.
    a. How often do you eat?
    b. Describe in detail what you eat?
    c. Describe what you ate yesterday?
4. Who influences what you eat on a daily basis?
    a. Who prepares or provides you with meals?
    b. What types of meals do they make?
5. What influences what you eat on a daily basis?
    a. How does cost affect your decisions?
    b. How does family affect your decisions?
    c. Do you plan your meals? If so, how far along do you plan your meals?
6. When you think about nutrition, what comes to mind?
7. Describe a healthy meal.
8. Describe what you eat to be healthy.
9. Where do you get information about the best foods to eat to be healthy?

Conceptualizations of Pregnancy

With this next set of questions, I will ask your thoughts about pregnancy.

10. When you hear the word “pregnancy”, what comes to mind?

a. What does pregnancy mean to you?
b. When is the best time for pregnancy?
c. Who should be involved in making decisions about pregnancy?
d. What do you think are the positive things about pregnancy?
e. What do you think are the negative things about pregnancy?

11. How important is pregnancy to you as a young female?
    a. How important do you think pregnancy is to others (family, friends, or community)?
12. How would you describe pregnancy to someone who has never been pregnant? ***(If they have had a previous pregnancy)***
13. Where do you get information about pregnancy?
    a. Who provides the information?
    b. What type of information are you provided?
    c. How often do you receive this information?
    d. Do you think that this information is helpful? If not, how can the information be improved? If yes, what is helpful about the information?
14. What do others say about pregnancy?
    a. What do your friends say about pregnancy? (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)
    b. What does your partner say about pregnancy? ***(If they have a partner)*** (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)

c. What does your family say about pregnancy? (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)

d. What does your church (or religious institution) say about pregnancy? ***(If they belong to a church or religious institution)*** (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)

e. What does your school say about pregnancy? ***(If they are in school)*** (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)

f. What do the health care workers at your clinic say about pregnancy? ***(Particularly if you interview a participant at the clinic)*** (best time for pregnancy, who should be involved, positive and negative opinions about pregnancy)

15. Do you feel any pressure from your family (or society) to have children--why or why not?

    a. If you decide not to have children in the future, do you think your husband/boyfriend will accept it? How about your family?

16. Do you think what a woman eats has an impact on the baby? How so?

Improving Pregnancy Outcomes

With this next question set of questions, I will ask your thoughts about improving pregnant women's health.

17. What are some challenges that women face during pregnancy?

18. What would improve the health of pregnant women and their unborn babies?

Conceptualizations of Planning for Pregnancy

With this next set of questions, I will ask your thoughts about the time before pregnancy and planning for pregnancy.

19. If a woman wants to one day become pregnant, what do you think is important for her in the time of her life before pregnancy?
20. When you hear the phrase "planning for pregnancy", what comes to mind?
    a. Do you think it is possible to plan for a pregnancy? Why or Why not?
21. If a woman wants to become pregnant, what do you think she does or can do to plan for pregnancy?
    a. Describe how you planned for your previous pregnancy? ***(If they have had a previous pregnancy)***
22. If a woman wants to become pregnant, when do you think she should begin planning for pregnancy?
    a. When is the best time to plan for pregnancy?
    b. What is the best environment (physical, social, and physiologically) for pregnancy?
23. If a woman wants to become pregnant, what would help her to better plan for a pregnancy?
    a. Information?
    b. Resources
24. Where (if at all) do you get information about planning for pregnancy?
    a. Who provides the information?
    b. What type of information are you provided?

c. How often do you receive this information?

d. Do you think that this information is helpful? If not, how can the information be improved? If yes, what is helpful about the information?

25. Who do you think should be involved in making decisions about pregnancy?

a. Who should be involved in making decisions about whether you should have children?

b. Who should be involved in making decisions about the number of children you will have?

26. Describe your previous pregnancy experience. ***(If they have had a previous pregnancy)***

a. Was it planned?

b. How did you plan for pregnancy?

c. Who made decisions about whether to have the child/children?

d. Did you seek antenatal care? When?

e. What role did your partner play in the pregnancy and childbirth?

f. What role did others play (friends, family, church etc.)?

g. What, if anything, would you do differently, because of that experience?

27. What information do you think you could have known or received before you got pregnant about pregnancy that could have helped you with your pregnancy? ***(If they have had a previous pregnancy)***

Influences of Conceptualizations of Nutrition, Pregnancy, and Planning for Pregnancy on Decision Making

In this last section, I will ask about how your thoughts influence your practices.

28. We have heard about your understanding of healthy food. Does this influence your decision of what you eat now? How?
29. Earlier, you shared your thoughts about what pregnancy means to you. Will this influence your next pregnancy? How?
30. In the future, if you decide to become pregnant, are you going to plan for that pregnancy? If yes, how will you plan for a pregnancy in the future? If no, what will influence your desire not to plan?
31. Is there anything that I did not ask that would help me to better understand what you think about nutrition, pregnancy or planning for pregnancy?

This concludes the interview. Thank you for your participation.

APPENDIX C – FOCUS GROUP DISCUSSION GUIDE

The following is the script and list of questions used for the focus group discussions.

Focus Group Discussion Questions

Thank you for joining us for this group discussion. I will read each question aloud and if you choose to do so, you are welcome to respond to all the questions. You can also respond to anything that another participant says or if you would just like to share any additional views. We kindly ask that one person speak at a time so that we can all hear the responses clearly. All responses are confidential. The group discussion will last for about 1 hour. Please feel free to ask me if you have any questions at any time before or during the group discussion. Before we begin, do you have any questions? If you have no questions at this time, we will begin.

Opening: I'd like to go around the circle and get each of you to tell us your first name.

Young Women's Health before Pregnancy

1. When you hear the word "health" what comes to mind?
2. When you think about young women's health (14-24 years), what comes to mind?
    a. When you think about young women's health (14-24 years) before pregnancy, what comes to mind?
    b. What helps young women to be healthy during the time before pregnancy? How?

c. What prevents young women from being healthy during the time before pregnancy? How?

d. How do you stay healthy as a young woman ***(If they are a young woman)***

e. Describe any specific health problems, if any, that affect you the most.***(If HCW or Partner: Describe any specific health problems, if any, that affect young woman in your community the most)***

f. Describe any specific health behaviors, if any, that affect you the most. ***(If HCW or Partner: Describe any specific health behaviors, if any, that affect young woman in your community the most)***

g. ***(If nutrition is not mentioned)*** How do you think food and nutrition plays a role in a young woman's health before pregnancy?

Improving Young Women's Health before Pregnancy

3. What can be done to improve the health of young women (14-24 years) in your community to prepare them should they decide to become pregnant as adults?

    a. Who should be involved in this (these) effort(s)?

    b. What information would be helpful in this (these) effort(s)? ***(Content and topic area)***

    c. What resources would be helpful in this (these) effort(s)?

    d. How can this approach (these approaches) be successful?***(What should be done and what should not be done)***

    e. Who should be targeted?

    f. Who should deliver the information and resources?

    g. How should they be delivered? ***(TV, media, pamphlets, etc.)***

h. Where should they be delivered?

i. When should they be delivered?

j. How long should these efforts be?

k. How often should they be offered?

l. What should be done to make these efforts successful? ***(What should be done and what should not be done)***

m. What should be done to ensure that young women have access to these efforts?

n. What should be done to encourage and enable young women to participate in these efforts?

Conclusion

4. Is there anything that I did not ask that would help me to better understand what you think about the health challenges you ***(or young women)*** are concerned about before pregnancy and what can be done to improve your ***(their)*** health during this time?

This concludes the group discussion. Thank you for your participation.

APPENDIX D – INTERVIEW AND FOCUS GROUP SOCIO-DEMOGRAPHIC SURVEYS

INTERVIEW SOCIO-DEMOGRAPHIC SURVEYS

The following socio-demographic surveys were used to collect socio-demographic characteristics of participants for specific aim 1 and 2 (semi-structured in depth interviews).

Young Women Socio-Demographic Survey

The following questions are being asked to help us determine the overall socio-demographic characteristics of participants in the study. Feel free to skip any question that you do not want to answer. If you do not have any questions at this time, let us begin.

Demographic Section

1. What is your age? _____

2. What is your race?
   - ☐ Black
   - ☐ White
   - ☐ Multiracial
   - ☐ Other race (please specify) _____

3. What is your ethnicity?
   - ☐ Shona
   - ☐ Ndebele
   - ☐ Other (please specify)_____

4. Where do you live?
   - ☐ Kuwadzana
   - ☐ Mabvuku

5. What is your marital status?

- ☐ Never married
- ☐ Married monogamous
- ☐ Married polygamous
- ☐ Divorced or separated
- ☐ Widowed
- ☐ Other (please specify)_____

6. What is your highest educational level?
   - ☐ None
   - ☐ Primary (Grade 1-7)
   - ☐ High school (Form 1-4)
   - ☐ High school (Form 5-6)
   - ☐ Some College/University
   - ☐ Certification
   - ☐ Bachelor's Degree
   - ☐ Graduate Degree
   - ☐ Postgraduate Degree
   - ☐ Other (please specify)_____

7. What is your religious affiliation?
   - ☐ Apostolic (please specify)_____
   - ☐ Catholic
   - ☐ Protestant (please specify)_____
   - ☐ Pentecostal (please specify)_____
   - ☐ Atheist
   - ☐ Traditional
   - ☐ Muslim
   - ☐ Other (please specify)_____

8. What is your main source of income?
   - ☐ Formally employed as,_____
   - ☐ Self-employed
   - ☐ Subsistence farmer
   - ☐ Remittances
   - ☐ Cross border trading
   - ☐ Dependent on partner
   - ☐ None
   - ☐ Other (please specify)_____

Obstetric History

9. Have you had any prior pregnancies (including miscarriages and stillbirths)?
   - □ Yes
   - □ No → *If no*, ***SKIP to question #15***

10. How many prior pregnancies have you had (including miscarriages and stillbirths)?
    _____

11. Do you currently have any children?
    - □ Yes
    - □ No → *If no*, ***SKIP to question #15***

12. How many children do you have? _____

13. When was your last child born? *(Year)* _____

14. Where did you deliver your last child?
    - □ Home
    - □ Clinic (please specify) _____
    - □ Hospital (please specify) _____
    - □ Other (please specify) _____

15. Are you currently pregnant?
    - □ Yes
    - □ No → *If no*, ***SKIP to the end***

16. Does your family know that you are currently pregnant?
    - □ Yes
    - □ No

17. How many months pregnant are you with this current pregnancy?
    _____

18. For this current pregnancy, have you attended an ANC visit?
    - □ Yes
    - □ No → *If no*, ***SKIP to question #23***

19. For this current pregnancy, when did you attend your first ANC visit (months pregnant and date)? _____

20. How many ANC visits have you attended during this pregnancy? _____

21. How often do you attend ANC services for this pregnancy?
- □ Every two weeks
- □ Every month
- □ Other (please specify)_____

22. Where are you currently seeking ANC services?
- □ Kuwadzana Maternity Clinic
- □ Mabvuku Maternity Clinic
- □ Other (please specify)_____

23. During this current pregnancy, do you have any of the following health conditions ***(check all that apply)***:
- Diabetes/Gestational Diabetes: Yes ☐ No ☐ I Don't Know) ☐
- HIV: Yes ☐ No ☐ I Don't Know) ☐
- High Blood Pressure/Preeclampsia/Eclampsia: Yes ☐ No ☐ I Don't Know) ☐
- Anemia: Yes ☐ No ☐ I Don't Know) ☐

Structural Environment Socio-Demographic Survey (Interviews with healthcare workers, family members, community leaders and teachers)

The following questions are being asked to help us determine the overall socio-demographic characteristics of participants in the study. Feel free to skip any question that you do not want to answer. If you do not have any questions at this time, let us begin.

Demographic Section

1. What is your gender?
- □ Female
- □ Male

2. What is your age? _____

3. What is your race?

☐ Black
☐ White
☐ Multiracial
☐ Other race (please specify) _____

4. What is your ethnicity?
☐ Shona
☐ Ndebele
☐ Other (please specify)_____

5. Where do you live?
☐ Kuwadzana
☐ Mabvuku
☐ Other

6. What is your marital status?
☐ Never married
☐ Married monogamous
☐ Married polygamous
☐ Divorced or separated
☐ Widowed
☐ Other (please specify)_____

7. What is your highest educational level?
☐ None
☐ Primary (Grade 1-7)
☐ High school (Form 1-4)
☐ High school (Form 5-6)
☐ Some College/University
☐ Certification
☐ Bachelor's Degree
☐ Graduate Degree
☐ Postgraduate Degree
☐ Other (please specify)_____

8. What is your religious affiliation?
☐ Apostolic (please specify)_____
☐ Catholic
☐ Protestant (please specify)_____
☐ Pentecostal (please specify)_____
☐ Atheist
☐ Traditional
☐ Muslim
☐ Other (please specify)_____

9. Are you currently employed?
   □ Yes
   □ No → *If no*, ***SKIP to End***

10. What is your position/title?
   □ Physician
   □ Registered Nurse (RGN)
   □ Midwife
   □ Teacher
   □ Other (please specify) _____

11. How long have you held this position? _____

12. Do you work with young women (14-24 years)?
   □ Yes (if yes, then in what capacity)_____
   □ No → *If no*, ***SKIP to End***

FOCUS GROUP SOCIO-DEMOGRAPHIC SURVEYS

The following socio-demographic surveys were used to collect socio-demographic characteristics of participants for specific aim 3 (focus groups).

Young Women Socio-Demographic Survey

The following questions are being asked to help us determine the overall socio-demographic characteristics of participants in the study. Feel free to skip any question that you do not want to answer. If you do not have any questions at this time, let us begin.

Demographic Section

1. What is your age? _____

2. What is your race?
   □ Black
   □ White
   □ Multiracial
   □ Other race (please specify) _____

3. What is your ethnicity?
   □ Shona
   □ Ndebele
   □ Other (please specify)_____

4. Where do you live?
   - ☐ Kuwadzana
   - ☐ Mabvuku

5. What is your marital status?
   - ☐ Never married
   - ☐ Married monogamous
   - ☐ Married polygamous
   - ☐ Divorced or separated
   - ☐ Widowed
   - ☐ Other (please specify)_____

6. What is your highest educational level?
   - ☐ None
   - ☐ Primary (Grade 1-7)
   - ☐ High school (Form 1-4)
   - ☐ High school (Form 5-6)
   - ☐ Some College/University
   - ☐ Certification
   - ☐ Bachelor's Degree
   - ☐ Graduate Degree
   - ☐ Postgraduate Degree
   - ☐ Other (please specify)_____

7. What is your religious affiliation?
   - ☐ Apostolic (please specify)_____
   - ☐ Catholic
   - ☐ Protestant (please specify)_____
   - ☐ Pentecostal (please specify)_____
   - ☐ Atheist
   - ☐ Traditional
   - ☐ Muslim
   - ☐ Other (please specify)_____

8. What is your main source of income?
   - ☐ Formally employed as,_____
   - ☐ Self-employed
   - ☐ Subsistence farmer
   - ☐ Remittances
   - ☐ Cross border trading
   - ☐ Dependent on partner
   - ☐ None
   - ☐ Other (please specify)_____

Obstetric History

9. Have you had any prior pregnancies (including miscarriages and stillbirths)?
   - ☐ Yes
   - ☐ No → *If no*, ***SKIP to question #15***

10. How many prior pregnancies have you had (including miscarriages and stillbirths)?
    _____

11. Do you currently have any children?
    - ☐ Yes
    - ☐ No → *If no*, ***SKIP to question #15***

12. How many children do you have? _____

13. When was your last child born? *(Year)* _____

14. Where did you deliver your last child?
    - ☐ Home
    - ☐ Clinic (please specify) _____
    - ☐ Hospital (please specify) _____
    - ☐ Other (please specify) _____

15. Are you currently pregnant?
    - ☐ Yes
    - ☐ No → *If no*, ***SKIP to the end***

16. Does your family know that you are currently pregnant?
    - ☐ Yes
    - ☐ No

17. How many months pregnant are you with this current pregnancy?
    _____

18. For this current pregnancy, have you attended an ANC visit?
    - ☐ Yes
    - ☐ No → *If no*, ***SKIP to question #23***

19. For this current pregnancy, when did you attend your first ANC visit (months pregnant and date)? _____

20. How many ANC visits have you attended during this pregnancy? _____

21. How often do you attend ANC services for this pregnancy?
    - ☐ Every two weeks

☐ Every month
☐ Other (please specify)_____

22. Where are you currently seeking ANC services?
☐ Kuwadzana Maternity Clinic
☐ Mabvuku Maternity Clinic
☐ Other (please specify)_____

23. During this current pregnancy, do you have any of the following health conditions ***(check all that apply)***:

- Diabetes/Gestational Diabetes: Yes ☐ No ☐ I Don't Know) ☐
- HIV: Yes ☐ No ☐ I Don't Know) ☐
- High Blood Pressure/Preeclampsia/Eclampsia: Yes ☐ No ☐ I Don't Know) ☐
- Anemia: Yes ☐ No ☐ I Don't Know) ☐

Healthcare Worker and Partner Socio-Demographic Survey

The following questions are being asked to help us determine the overall socio-demographic characteristics of participants in the study. Feel free to skip any question that you do not want to answer. If you do not have any questions at this time, let us begin.

Demographic Section

1. What is your gender?
☐ Female
☐ Male

2. What is your age? _____

3. What is your race?
☐ Black
☐ White
☐ Multiracial
☐ Other race (please specify) _____

4. What is your ethnicity?
☐ Shona
☐ Ndebele
☐ Other (please specify)_____

5. Where do you live?
☐ Kuwadzana
☐ Mabvuku
☐ Other

6. What is your marital status?
   - ☐ Never married – In a relationship
   - ☐ Never married – Not in a relationship
   - ☐ Married monogamous
   - ☐ Married polygamous
   - ☐ Divorced or separated
   - ☐ Widowed
   - ☐ Other (please specify)_____

7. What is your partner's age? _____ ***(If in a relationship or married)***

8. What is your highest educational level?
   - ☐ None
   - ☐ Primary (Grade 1-7)
   - ☐ High school (Form 1-4)
   - ☐ High school (Form 5-6)
   - ☐ Some College/University
   - ☐ Certification
   - ☐ Bachelor's Degree
   - ☐ Graduate Degree
   - ☐ Postgraduate Degree
   - ☐ Other (please specify)_____

9. What is your religious affiliation?
   - ☐ Apostolic (please specify)_____
   - ☐ Catholic
   - ☐ Protestant (please specify)_____
   - ☐ Pentecostal (please specify)_____
   - ☐ Atheist
   - ☐ Traditional
   - ☐ Muslim
   - ☐ Other (please specify)_____

10. Are you currently employed?
    - ☐ Yes
    - ☐ No → *If no*, ***SKIP to End***

11. What is your position/title?
    - ☐ Physician
    - ☐ Registered Nurse (RGN)
    - ☐ Midwife
    - ☐ Teacher
    - ☐ Other (please specify) _____

12. How long have you held this position? _____

13. Do you work with young women (14-24 years)?

□ Yes (if yes, then in what capacity)_____

□ No → *If no*, ***SKIP to End***

APPENDIX E – STUDY CONSENT AND ASSENT FORMS

The following are study consent and assent forms.

MRCZ No.

UNIVERSITY OF SOUTH CAROLINA

INFORMED CONSENT FORM FOR ADULT PARTICIPANTS

Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe

Principal Investigator: Chiwoneso Tinago, MPH
Phone number(s): 0783279875

What you should know about this study:

- We give you this consent form so that you can read about the reasons behind this study and the possible risks and benefits of this study.
- We want to learn about how to help young women improve their health.
- We cannot promise that this study will help you.
- You have the right to say yes or no to being in the study.
- Whatever you decide, it will not affect your regular care at the clinic or your school.
- Please read this form carefully. Feel free to ask any questions before you say yes or no.

PURPOSE

You are being asked to be in a study where we want to find out your views about nutrition and pregnancy for young women. We also want to find out what you think should be done to improve the health of young women (14-24 years). You have been chosen to be in this study because you are a young woman aged 14-24 years, a health worker, a teacher, a family member of a young woman aged 14-24 years, a community leader, or a partner of a young woman who has had a pregnancy. We will be talking to between 200-232 participants who live in Harare.

PROCEDURES AND DURATION

If you say yes to being in this study, you will have a 45-60 minute interview or a 60 minute group discussion at a time and place that you choose. During the interview, you will be asked questions about your views on nutrition and pregnancy by the interviewer. Only you and the interviewer will be in the room speaking to one another. During the group discussion, you will be asked questions as a group of 8-10 people about what can be done to improve the health of young women. The study will have 4 discussion groups with young women (14-17 years), 6 discussion groups with young women (18-24 years), 4 discussion groups with healthcare workers and 2 discussion groups with partners of young women. The study will also have 48 interviews with young women (14-24 years) and 24 interviews with health workers, teachers, family members of a young woman aged 14-24 years and community leaders.

You will only be asked to participate in either the interview or group discussion, but you can participate in both if you would like to.

- Examples of interview questions that young women aged 14-24 years will be asked are:
  1. What does health mean to you as a young woman?
  2. When you think about nutrition, what comes to mind?
  3. When you hear the word "pregnancy", what comes to mind?

- Examples of interview questions for healthcare providers, teachers, family members and community leaders are:
  1. What health challenges do young women (14-24 years) face in your school/community/clinic/church?
  2. What do you think can be done to improve the health of young women (14-24 years) in your community?
  3. What health programs related to pregnancy are offered in your school/community/clinic/church for young women (14-24 years)?

- Examples of group discussion questions for all participants are:
  1. When you think about women's health before pregnancy, what comes to mind?
  2. What can be done to improve the nutrition of young women (14-24 years) in your community?

The interview or group discussion will be recorded on a voice recorder so that I can write out what we talk about. The recordings will only be heard by those working on this study. They will then be destroyed. You will also be asked to finish another short form asking for information such as age, education and other information to understand your background.

RISKS AND DISCOMFORTS

The risks of being in this study are small. If you no longer want to answer our questions, you can stop participating at any time. We will also make every effort to protect your personal information, but sometimes, a research study may be studied by a larger organization which is responsible for making sure that the study is following the rules for working with people, such as the University of South Carolina Institutional Review Board or the Medical Research Council of Zimbabwe. If this happens, your records and the consent form you sign may be checked for your safety.

BENEFITS AND COMPENSATION

You don't have to pay anything for being a part of this study. You will get a total of US$5 for finishing the interview or group discussion.

CONFIDENTIALITY

For the study, you will be given an identification (ID) number, to replace your name. Your name will not be written with your answers to the questions. The content of the focus group discussions and the identity of the group participants will be kept confidential by the other participants in the group. If you are a part of this study, we plan to show the study results to various sponsors in health organizations in Zimbabwe and around the world

through presentations and reports. All study information will only be seen by the research team. The study information from the interviews and group discussions will be kept safely in a locked cabinet and in a password-protected folder and computer. All information is private.

ADDITIONAL COSTS
There are no costs to you for being in this study.

VOLUNTARY PARTICIPATION
Participation in this study is voluntary. You can change your mind about whether you want to be a participant and you are free to stop participating at any time.

SIGNATURE PAGE

Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe
Protocol Version Number/date

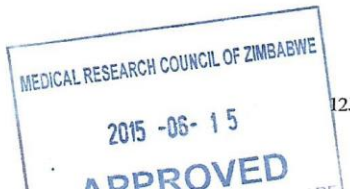
OFFER TO ANSWER QUESTIONS
Before you sign this form, please ask any questions about this study that you don't understand. You may take as much time as you need to think it over. The lead researcher can be contacted at 0783279875.

AUTHORIZATION
You are choosing to say yes or no to being in this study. Your signature shows that you have read and understood the information in this form and all your questions have been answered, and you want to be in the study. I understand that voice recordings will be taken during the study.

Name of Participant (please print)	Date
Signature of Participant	Time

Name of Staff Obtaining Consent	Signature	Date
Name of Witness	Signature	Date

YOU WILL BE OFFERED A COPY OF THIS CONSENT FORM TO KEEP.



MRCZ No.

If you have any questions concerning this study or consent form beyond those answered by the investigator, including questions about the research, your rights as a research participant or research-related injuries; or if you feel that you have been treated unfairly and would like to talk to someone other than a member of the research team, please feel free to contact the Medical Research Council of Zimbabwe (MRCZ) on telephone (04)791792 or (04) 791193 and cell phone lines 0772 433 166 or 0779 439 564. The MRCZ Offices are located at the National Institute of Health Research premises at Corner Josiah Tongogara and Mazowe Avenue in Harare.

UNIVERSITY OF SOUTH CAROLINA

INFORMED CONSENT FORM FOR PARENTAL CONSENT AND CHILD ASSENT

Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe

Principal Investigator: Chiwoneso Tinago, MPH
Phone number(s): 0783279875

What you should know about this study:

- We give you this consent form so that you can read about the reasons behind this study and the possible risks and benefits of this study.
- We want to learn about how to help young women improve their health.
- We cannot promise that this study will help your child.
- You have the right to say yes or no to your child being in the study.
- Whatever you decide, it will not affect your child's regular care at the clinic or at school.
- Please read this form carefully. Feel free to ask any questions before you say yes or no.
- Your choice to allow your child to participate is voluntary.

PURPOSE

You are being asked to allow your child to be in a study where we want to find out about what your child thinks about nutrition and pregnancy. We also want to find out what your child thinks should be done to improve the health of young women (14-24 years). Your child was chosen to be in this study because they are a young woman aged 14-24 years. We will be talking to between 200-232 young women aged 14-24 years, healthcare workers, teachers, family members, and community leaders, and partners of young women who have had a pregnancy who live in Harare.

PROCEDURES AND DURATION

If you say yes to your child being in this study, they will have a 45-60 minute interview or a 60 minute group discussion at a time and place that they choose. During the interview, they will be asked questions about their views on nutrition and pregnancy by the interviewer. Only your child and the interviewer will be in the room speaking to one another. During the group discussion, your child will be asked questions as a group of 8-10 other female youth aged 14-17 years about what can be done to improve the health of young women. The study will have 4 discussion groups with young women (14-17 years), 6 discussion groups with young women (18-24 years), 4 discussion groups with healthcare workers and 2 discussion groups with partners of young women. The study will also have 48 interviews with young women (14-24 years) and 24 interviews with health workers, teachers, family members of a young woman aged 14-24 years and community leaders.

Your child will only be asked to participate in either the interview or group discussion, but they can participate in both if they would like to.

- Examples of interview questions that young women aged 14-24 years will be asked are:
  1. What does health mean to you as a young woman?
  2. When you think about nutrition, what comes to mind?
  3. When you hear the word "pregnancy", what comes to mind?

- Examples of interview questions for healthcare providers, teachers, family members and community leaders are:
  1. What health challenges do young women (14-24 years) face in your school/community/clinic/church?
  2. What do you think can be done to improve the health of young women (14-24 years) in your community?
  3. What health programs related to pregnancy are offered in your school/community/clinic/church for young women (14-24 years)?

- Examples of group discussion questions for all participants are:
  1. When you think about women's health before pregnancy, what comes to mind?
  2. What can be done to improve the nutrition of young women (14-24 years) in your community?

The interview or group discussion will be recorded on a voice recorder so that I can write out what we talk about. The recordings will only be heard by those working on this study. They will then be destroyed. Your child will also be asked to finish another short form asking for information such as age, education and other information to understand your background.

RISKS AND DISCOMFORTS

The risks of your child being in this study are small. If your child no longer wants to answer our questions, they can stop participating at any time. We will also make every effort to protect your personal information, but sometimes, a research study may be studied by a larger organization which is responsible for making sure that the study is following the rules for working with people, such as the University of South Carolina Institutional Review Board or the Medical Research Council of Zimbabwe. If this happens, your records and the consent form you sign may be checked for your safety.

BENEFITS AND COMPENSATION

We cannot and do not promise that your child will be helped from this study. You or your child don't have to pay anything for being a part of this study. Your child will get a total of US$5 for finishing the interview or group discussion.

CONFIDENTIALITY

For the study, your child will be given an identification (ID) number, to replace their name. Your child's name will not be written with your answers to the questions. The content of the focus group discussions and the identity of the group participants will be kept confidential by the other participants in the group. If your child is a part of this study, we plan to show the study results to various sponsors in health organizations in Zimbabwe

and around the world through presentations and reports. All study information will only be seen by the research team. The study information from the interviews and group discussions will be kept safely in a locked cabinet and in a password-protected folder and computer. All information is private.

ADDITIONAL COSTS

There are no costs to you or your child for being in this study.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. You can decide not to allow your child to be in this study. You and your child can change your minds about participating and are free to stop participating at any time.

SIGNATURE PAGE

Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe
Protocol Version Number/date

OFFER TO ANSWER QUESTIONS

Before you sign this form, please ask any questions about this study that you don't understand. The lead researcher can be contacted at 0783279875.

AUTHORIZATION

You are choosing to say yes or no to your child being in this study. Your signature shows that you have read and understood the information in this form and all your questions have been answered, and you want your child to be in the study. I understand that voice recordings will be taken during the study.

_____ _____
Name of Parent or legally authorized representative (please print) Date

_____ _____
Signature of Parent or legally authorized representative Time

_____
Relationship to the Participant

_____ _____ _____
Name of Staff Obtaining Consent Signature Date

_____ _____ _____
Name of Witness Signature Date

YOU WILL BE OFFERED A COPY OF THIS CONSENT FORM TO KEEP.

If you have any questions concerning this study or consent form beyond those answered by the investigator, including questions about the research, your rights as a research participant or research-related injuries; or if you feel that you have been treated unfairly and would like to talk to someone other than a member of the research team, please feel free to contact the Medical Research Council of Zimbabwe (MRCZ) on telephone (04)791792 or (04) 791193 and cell phone lines 0772 433 166 or 0779 439 564. The MRCZ Offices are located at the National Institute of Health Research premises at Corner Josiah Tongogara and Mazowe Avenue in Harare.

INFORMED ASSENT FORM
FOR CHILD CONSENT

I am a researcher from the University of South Carolina. I am working on a study about young women's health and I would like your help. I am interested in learning more about what you think about nutrition and pregnancy. Your parent/guardian has already said it is okay for you to be in the study, but it is up to you.

If you want to be in the study, you will be asked to participate in a 45-60 minute interview or a 60 minute group discussion at a place that is best for you.

Any information you share with me will be private. No one except me and the other researchers will know what your answers to the questions will be. Your name will not be written with your answers. I will record your answers on a tape recorder which will only be heard by the researchers working on this study.

You don't have to help with this study. Being in the study isn't related to your regular class work and won't help or hurt your grades and it will not change the care you receive at this clinic. You can also drop out of the study at any time, for any reason, and you won't be in any trouble and no one will be mad at you.

Please ask any questions you would like to.

Signing your name below means you have read the information about the study (or it has been read to you), that any questions you may have had have been answered, that the interview or group discussion will be voice recorded, and you have decided to be in the study. You can still stop being in the study any time you want to. I will also give you a copy of this form to keep.

Printed Name of Minor		Age
Signature of Minor		Date
Name of Staff Obtaining Assent	Signature	Date

APPENDIX F – CODE BOOK FOR SPECIFIC AIMS 1-3

CODE BOOK

Specific Aim 1: Interviews with adolescent girls and young women (14-24 years)

Conceptualizations of Pregnancy

Codes: When you hear the work pregnancy, what comes to mind?

- Antenatal Care
- Best time for pregnancy
- Burden
- Can you afford the pregnancy?
- Carrying a child
- Child will take care of you in the future
- Conception
- Cultural expectation
- Dangers of pregnancy
- Decision makers
  - Family
  - Husband
  - Husband and Wife
  - I don't know
  - Nurses
  - Parents
  - Those with knowledge
  - Wife - Mother of baby
- Delivery
- Difficult
- Early or rushed
- Expecting a child
- Family acceptance of the pregnancy
- Family grows
- Fear
- HIV
- How you became pregnant - circumstances
- I don't know or I don't know much about pregnancy
- Importance of pregnancy

- Labor pains
- Married
- Maturity
- Miscarriage
- Mixed feelings
- Motherhood
- Negative things about pregnancy
- No negative complications
- Painful
- Positive things about pregnancy
- Pregnant at a young age
- Preparing to have a child
- Process of giving birth
- Responsibility
- The joys of becoming a mother
- Treated like a queen
- Unwanted or unplanned pregnancies
- Who is responsible for the pregnancy?
- You will have a child

Conceptualizations of Planning for Pregnancy

Codes: When you hear the phrase "planning for pregnancy" what comes to mind?

- A process
- Are you healthy enough for pregnancy?
- Can plan for pregnancy
- Can plan for second pregnancy not first
- Cannot plan for pregnancy
- Children
- Contraception - family planning
- Difficult to plan
- Discussing with partner - an agreement
- Get information
- Getting tested for HIV
- I don't know
- I will learn
- Mixed view - can and cannot plan
- Nothing
- Number of children
- Plan after first pregnancy
- Planning for what will happen during pregnancy
- Planning is good
- Preparing to support the child financially
- Ready for pregnancy

- Responsibility
- Spacing pregnancies
- Too young to plan for pregnancy
- Unplanned pregnancy

Specific Aim 2: Interviews with key community stakeholders

Common and Shared Beliefs about Pregnancy

- African medicine for delivery
- Cultural expectation in marriage
- Discuss with husband before pregnancy
- Don't go to the clinic immediately after water breaking
- Don't provoke people or be angry during pregnancy
- Don't tell people about pregnancy
- Evil spirits and caesarian sections
- Fulfillment of marriage and woman's role
- Get tested for HIV
- Go seek counsel from Apostolic Church
- Importance of registering pregnancy
- Pregnancy is a cultural expectation in marriage
- Pregnancy is good
- Pregnant woman treated with care
- Right age and social status for pregnancy
- Should be married
- Twins a bad omen

Programs and policies related to improving adolescent girls and young women's health

- Adolescent Corner or Adolescent Friendly
- Church Programs
- Clinic Programs
- Community health services
- Emancipation program
- Fund to pay for health services at clinic
- Guidance and Counseling
- Health Center Committee
- HIV education
- HIV peer group financing
- Immunization Programs
- Medical Fund
- Negatives or challenges
- No programs or policies or laws

- Nutrition Programs
- Positives
- Pregnancy Programs
- Prevention of Early Marriage and Pregnancy
- School Programs
- Support groups
- Training programs
- Zichiri

Specific Aim 3 – Focus groups with adolescent girls, young women, healthcare workers and partners

- Ensuring effectiveness of pre-pregnancy efforts
  - Certificates of completion
  - Community support
  - Evaluate effectiveness
  - Involve men or partners
  - Involve parents
  - Peer education from those who have been taught
  - Separate age groups
  - Tangible resources in addition to education
  - Training of educators
  - Transport
- Facilitators of pre-pregnancy efforts
  - Knowledgeable elder females
  - Knowledgeable female no age requirement
  - Nurses female
  - Peer
- Health Behavior Targets for Pre-pregnancy Efforts
  - Drug abuse
  - Eating nutritious food
  - Health visits not only when sick
  - Hygiene
  - Physical Verbal and Sexual abuse
  - Prevention early sex and early marriage
  - Risky sexual behavior
  - Smoking and drinking
  - Talent nurturing programs
  - Testing for HIV
- Health Targets for Pre-pregnancy Efforts
  - HIV
  - Life lessons
  - Nutrition
  - Pregnancy
  - Reproductive health
  - Stress

    - Transition changes from childhood to adolescence to adulthood
- Length of pre-pregnancy efforts
    - 1 hour
    - 2 hours
- Location of programs
- Memorable quotes
- Methods for delivering pre-pregnancy efforts
- Methods of education
- No condoms - Contraception contention
- Recruitment Strategies for Pre-pregnancy efforts
    - Audio Tracks
    - Awareness campaigns
    - Clinics
    - Government involvement
    - Health worker recruitment
    - Incentives
    - Pamphlets
    - Posters
    - Stickers on combis
- Things that may prevent effectiveness of pre-pregnancy efforts
- Timing of pre-pregnancy efforts
    - Every month
    - Every school term
    - Every two months
    - Every week
    - Ongoing
    - Three times a week
    - Weekends
- Types of pre-pregnancy efforts
    - Abuse Education
    - Camps
    - Church
    - Clinic Nutrition Education Days
    - Collaboration between HCWs and teachers for health programs
    - Community Education Outreach
    - Counseling
    - Counseling education at church
    - Education - School
    - Edutainment
    - Empowerment
    - Government educational programs
    - Group Discussions
    - Guidance and Counseling
    - Health promoter outreach
    - Improve parent child communication
    - Income generating activities

- Information
- Men or partner targeted programs
- Musical performances or Entertainers
- Parental involved or targeted programs
- Peer education
- Physical health structures
- Pregnancy information
- Radio programming
- Recreation programs
- Reduced health service fees
- Resident nurse educators in schools
- Road shows
- School Curriculum integration
- School Health Education Days
- Support groups
- Talent nurturing programs
- Talk Show
- Target community
- Targeting young girls
- Technology
- Training programs
- Video testimonials
- Workshops
- Write educational books
- Youth Friendly Corners in Clinics
- Youth friendly groups in schools and churches

APPENDIX G – STUDY APPROVAL LETTERS

The following are the institutional review board approval letters received from the University of South Carolina institutional review board, city of Harare ethics committee, and the Medical Research Council of Zimbabwe.

UNIVERSITY OF
SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
APPROVAL LETTER

This is to certify that the following proposal: **Pro00043532**

Entitled: *Understanding Conceptualizations and Structural Environment for Improving Pre-Pregnancy Planning for Young Women of Childbearing Age in Harare, Zimbabwe*

Submitted by:
Principal Investigator: Ms. Chiwoneso Tinago
College: Arnold School of Public Health
Department: Health Promotion, Education & Behavior
800 Sumter Street, Room 322B
Columbia, SC 29208

was reviewed and approved for continuation by the University of South Carolina Institutional Review Board (USC IRB) by Expedited review on (category 7).

Approval is for a one-year period from **4/15/2016** to **4/14/2016**. When applicable, approved consent /assent documents are located under the "Stamped ICF" tab on the Study Workspace in eIRB.

PRINCIPAL INVESTIGATORS ARE TO ADHERE TO THE FOLLOWING APPROVAL CONDITIONS

- The research must be conducted according to the proposal/protocol that was approved by the USC IRB
- Changes to the procedures, recruitment materials, or consent documents, must be approved by the USC IRB prior to implementation
- If applicable, each subject should receive a copy of the approved date stamped consent document
- It is the responsibility of the principal investigator to report promptly to the USC IRB the following:
  - Unanticipated problems and/or unexpected risks to subjects
  - Adverse events effecting the rights or welfare of any human subject participating in the research study
- Research records, including signed consent documents, must be retained for at least (3) three years after the termination of the last IRB approval.
- No subjects may be involved in any research study procedure prior to the IRB approval date, or after the expiration date. For continued approval of the research study, an update of the study is required prior to the expiration date. The PI is responsible for initiating the Continuing Review process. At the time a study is closed, a Continuing Review report form is to be used for the final report to the USC IRB in order to formally close the research study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board. If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

Lisa M. Johnson
IRB Manager

CITY OF HARARE

Director of Health Services

DR PROSPER CHONZI
MBChB, MPH,MBA

All correspondence to be addressed to the
DIRECTOR OF HEALTH SERVICES

Ref:

Your Ref:

DIRECTOR OF HEALTH SERVICES
Rowan Martin Building,
Civic Centre,
Pennefather Avenue,
off Rotten Row,
Harare, Zimbabwe.

P.O. Box 596
Telephone: 753320
753330/1/2
Fax: (263-4) 752043

15 May 2015

Chiwoneso Tinago
8 Wenlock road
Hatfield
HARARE

Dear Madam

RE: PERMISSION TO RECRUIT AMND INTERVIEW PARTICIPANTS AT MABVUKU AND KUWADZANA MATERNITY CLINIC.

I acknowledge receipt of your letter in connection with the above

Permission has been granted for you to recruit and interview participants and healthcare providers at Mabvuku and Kuwadzana maternity clinics on the topic: '***Understanding conceptualization and structural Environment for Improving Pre Pregnancy Planning for Young Women of Childbearing Age in Harared Zimbabwe.***

For further assistance please liaise with the Sister In Charge at Mabvuku and Kuwadzana Clinics.

Yours faithfully

DIRECTOR OF HEALTH SERVICES
IM/rm

c.c. Nursing Manager
S.I.C - Mabvuku Clinic
S.I.C. - Kuwadzana clinic

Telephone: 791792/791193
Telefax: (263) - 4 - 790715
E-mail: mrcz@mrcz.org.zw
Website: http://www.mrcz.org.zw

Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL

REF: MRCZ/A/1961 **15 June, 2015**

Chiwoneso Tinago
University of South Carolina
1420 Farrington way Apt E
Department of Health Promotion Education and Behaviour
Columbia, South Carolina 29210
USA

RE: Understanding Conceptualisation and Structural Environment For Improving Pre-Pregnancy Planning For Young Women Of Childbearing Age In Harare, Zimbabwe.

Thank you for the application for review of Research Activity that you submitted to the Medical Research Council of Zimbabwe (MRCZ). Please be advised that the Medical Research Council of Zimbabwe has reviewed and approved your application to conduct the above titled study.

This approval is based on the review and approval of the following documents that were submitted to MRCZ for review:-

a) Protocol
b) Informed Consent Form for Adults, Version 1.0 dated 12 June, 2015 (English and Shona)
c) Parental Informed Consent and Child Assent , Version 1.0 dated 12 June, 2015 (English and Shona)
d) Recruitment Fliers (English and Shona)
e) Young Women Socio- Demographic Survey (English and Shona)
f) Interview and Focus Group Discussion Tools (English and Shona)

- **APPROVAL NUMBER : MRCZ/A/1961**

This number should be used on all correspondence, consent forms and documents as appropriate.

- **TYPE OF MEETING : Expedited**
- **EFFECTIVE APPROVAL DATE : 15 June, 2015**
- **EXPIRATION DATE : 14 June, 2016**

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted three months before the expiration date for continuing review.

•SERIOUS ADVERSE EVENT REPORTING: All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices or website.

•MODIFICATIONS: Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).

•TERMINATION OF STUDY: On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices or website.

•QUESTIONS: Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail on mrcz@mrcz.org.zw

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully

MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE

MEDICAL RESEARCH COUNCIL OF ZIMBABWE
2015 -06- 15
APPROVED

PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

APPENDIX H – SPECIFIC AIM 2 RESULTS: PHYSICAL ENVIRONMENT RELATED TO PREGNANCY AND PLANNING FOR PREGNACY

The following are the study results for the physical environment related to pregnancy and planning for pregnancy and its influences on pregnancy-related outcomes described by key community stakeholders.

Some participants described the lack of health programs targeting adolescent girls and young women in the community stating, “At our school I haven’t seen any programs” (Teacher, female, 30 years), “There are no health programs for the youth, just for the mothers in the church” (Family member, female, 26 years) and “There is nowhere I have seen any program related to that” (Family member, female, 45 years). Among those that described programs for adolescent girls and young women in their community, these programs fell into four main categories: clinic programs, school programs, community programs, and church programs.

Clinic Programs

Clinic programs that targeted adolescent girls and young women included ANC, PMTCT, health committees, and adolescent corners. ANC was a central program that targeted pregnant women in the community and these ANC visits were group sessions with between 20-50 pregnant women. Pregnant women received health education including nutrition education, pregnancy examinations, and HIV testing, and micronutrient supplementation. A main challenge of ANC was the cost of the program with a healthcare worker explaining:

> Our challenges are due to our economic problem in the country. many mothers are failing to afford the $25, hence they come late for booking or they don't even come to book so by so doing most of them are home deliveries and being a home delivery without booking usually they are the poor who are already anemic so a lot of mothers, they come here postnatal being very sick because they will be pale. They come late to the clinic because they don't have money for transport so really it's a problem. (Healthcare worker, female, 45 years)

Additional challenges with ANC included staff shortages and delayed or non-booking of ANC services.

Another clinic program described by participants was the Health Center Committee. A community leader stated:

> We discuss issues related to teaching about reproductive health and AIDS. Also the Health Center Committee their role is to find out how we can help the clinic to be able to improve and become a district hospital. But right now they are starting by growing the maternity wing because it is helping a large community so those are some things that are being done to uplift the health of people. (Community leader, male, 50 years)

Some positive things about this committee was that they were influential in renovating the community clinic and they were working towards providing 24 hour access to clinic services. The community leader also described some challenges that the committee faced stating, "Some challenges of these programs is the targeted population I don't know if they are really looking for them or are they providing a general service to the population. So I think that if the programs are not targeted, then I don't think that they will help people" (Community leader, male, 50 years).

Healthcare workers also described an adolescent corner available at one of the clinics in the study community stating, "We have an adolescent corner where we meet adolescents, they discuss their problems, they help each other and they tell us what they want the adults to do or how they want to be understood by the adults" (Healthcare worker, female, 45 years). These adolescent corners were usually manned by younger

female nurses because participants stated that adolescent girls and young women would feel comfortable speaking with them. A challenge healthcare workers described facing these adolescent corners was that adolescent girls and young women were not accessing them. A healthcare worker described, "The exposed ones, the already infected ones do come to the clinic like when they are HIV positive and then the OI registered, that's when they can turn up but the, when they are not affected they don't normally come so it's still a challenge" (Healthcare worker, female, 45 years).

Clinic programs also addressed nutrition with a healthcare worker describing:

> At this clinic we have a nutritional garden, if you look behind there, there is a garden. So if there are babies or children whom we identify that they are malnourished we have got days that they come here to be fed and we demonstrate how to cook and they feed their babies and those ones who are already malnourished we have got Plumpy Nut and we give them the Plumpy Nut and also by this growth monitoring program we are able to identify those, those who are and recruit them into our programs. (Healthcare worker, female, 45 years).

Church Programs

Participants described the church as being an integral place for providing health education to youth. A community leader explained:

> We have a program for women where they play soccer with the youth. Some may not come due to their work obligations, but we do encourage exercises. We also encourage people to farm. Whether you rent or not, you should have a vegetable garden. So we teach them that they can plant vegetables in tins and in tires. We also invite health workers that know about nutrition to give us lessons at church on a Sunday…We invited someone, I can't remember their name since it was some time ago, they came and taught about HIV/AIDS. They also taught about cancers, especially breast cancer and cervical cancer. Then we had the privilege of having a doctor who attended our church and we gave them one service a month to talk about health in addition to when we had big Sundays we gave them an hour to educate people. We had a mother who does herbs like wild vegetables and we give her time to teach the ladies about that. (Community leader, female, 47 years)

Another community leader also described a mentoring program at one of the local churches stating, “We encouraged the older women in the church to advise the younger members inside the church and also in their homes about life and about what it’s like to be mothers” (Community leader, male, 29 years)

School Programs

School programs centered on Guidance and Counseling sessions for high school students. A teacher described:

> It is a subject on its own. So in that subject Guidance and Counseling, that is where children are given guidance as to what pregnancy is all about. In most cases though, we just look at those children without talking about adult issues. We just talk about children only, on how they handle these things. So we talk only during that time. (Teacher, female, 45 years)

When asked if they discuss pregnancy in these classes, the teacher responded:

> We do not get deep in discussing the issues, because we fear that if we do that sometimes we would be encouraging them to become pregnant. So we just tell them not to rush to get pregnant because this has such problems. Because these are very young children. So if we tell them that you get pregnant like, so, so, so, it would be as though we are encouraging them to go and do it. So we just, we do not then discuss it in depth because we are talking to children. (Teacher, female, 45 years)

Community Programs

Participants described community health nurses who were available in each of the study clinics stating, “The health promoters they will go to the society. Then they educate the society, then in most cases, they identify cases which need to be attended” (Family member, male, 27 years). Participants also described how community health programs often were related to HIV prevention with a healthcare worker stating:

> Programs are there, but as you know, programs that are there are mostly related to HIV. Those are the most that we see. There are some groups that are there, NGOs, who try to incorporate them. For example there is a group that is there that I know. They take these people and teach them lessons and many other things like

> positive living, general knowledge on health and also approach us to help in some of these things so that they can improve. Another group teaches them how to use computers, such things so that they keep abreast with technology and not leg behind. Another group that I know, also gives driving lessons, so that there is something positive in their lives. And within the ministry, we have something that is under National Aids Council (NAC) that is called DAC. This year it had programs for the young woman, just to give them information and involve them in their meetings to make a difference in their lives. They were also taking some of them as they do their research so that they are involved in the goings on. So there are such things that are taking place around. (Healthcare worker, female, 50 years)

Community programs also included support groups for young with HIV

APPENDIX I – SPECIFIC AIM 3 RESULTS: PRE-PREGNANCY HEALTH APPROACHES

Research Question 5: What are participants' views concerning specific health conditions or behaviors that will be addressed through a pre-pregnancy planning intervention for adolescent girls and young women (14-24 years) in Harare, Zimbabwe and the preferred methods for delivering the intervention?

The initial age of introducing pre-pregnancy health efforts to adolescent girls and young women varied across participants with some participants requesting efforts targeting girls aged 12 years and some requesting efforts beginning in late-adolescence. These varying views were driven by participant's concern that talking with young girls about pregnancy would encourage them to engage in sexual activity. This concern also extended to contraception education and availability to adolescent girls and young women. Despite these varying views, participants acknowledged the importance of pre-pregnancy health and supported the development of age appropriate efforts to improve the health of adolescent girls and young women before pregnancy.

Pre-pregnancy topics

Specific topics that participants described as potentially being addressed to improve the health of adolescent girls and young women before pregnancy were based on three categories; specific health conditions, health behaviors, and social issues (Table 5.2). Health conditions that participants described as potentially being addressed to

improve the health of adolescent girls and young women before pregnancy included HIV/AIDS, STIs, stress, and anemia. A healthcare worker stated, "Things to discuss areabout family planning…even HIV as in modes of transmission, prevention, Option B+ and all of that" (Focus group 9, Healthcare worker). A young woman described:

> I want to support what was said about taking care of yourself when you are young because if you engage on risky actions before you get married it will disrupt a lot of things because you will get an STI and you will be treated for many STIs so that even your child will also be unhealthy since you have already messed up your health. Before you get married, just be alright. Don't engage in risky actions because you will contact an illness that cannot be treated and maybe that illness may affect your pregnancy. Maybe the treatments you are taking will mess up the growth of your baby. Maybe you will have a miscarriage or whatever. (Focus Group 13, Young woman 21-24 years)

In terms of stress, a young woman stated, "You should be told…how not to be stress because stress causes miscarriage" (Focus Group 13, Young woman 21-24 years)

Health behaviors included preventing substance abuse (drugs and alcohol), healthy eating, accessing health services not only when sick, hygiene, prevention early sex and early marriage, prevention of risky sexual behavior, testing for HIV, and prevention of smoking. A health care worker described:

> Some of them are chain smokers so when they are chain smokers, if they become pregnant they usually have abortions or give birth to pre-terms so they need to be taught if they do want to give birth they need to limit cigarettes because they are trying everything. Drugs, alcohol some are giving birth to down syndrome babies because of alcohol so they need advice. (Focus group 8, Healthcare worker)

In terms of healthy eating, a young woman said:

> You need advice like if you want your child to be born like this you should eat this and do this and you get a list. Like me I can give an example. My mother- in-law worked at the clinic. Before I got pregnant she said that you should not eat sadza and okra every day. Eat them but not every day. Eat carrots, eat liver and so and so that your child will be healthy. She told me to always eat healthy so that when I become pregnant, I can deliver them with good health. You should be told what to eat. (Focus Group 13, Young woman 21-24 years)

A healthcare worker described accessing healthcare services saying, “We should also teach that they don’t only have to go to the clinic when they are sick” (Focus group 10, Healthcare worker) while a young woman outlined the need for HIV testing stating, “Encouraging that people go and get tested (for HIV) because some might understand if it is properly explained to them and they might feel free to go and get tested” (Focus group 1, Young woman 18-20 years)

Participants also described the need for addressing hygiene with an adolescent girl explaining, “I think parents should know that at this age a child needs sanitary wear because if a parent does not buy sanitary wear for the child there will be hygiene issues” (Focus group 2, Adolescent girl 14-17 years). Early marriages and early sex were also identified as potential pre-pregnancy target with a young woman describing:

> If you have an early marriage, there is no way you will be able to take care of yourself or be independent because, one, you have messed up your education. At 14 years you misbehave and you have a child. Maybe the person who got you pregnant, you may not know his status. You don’t know how he has lived his life. You just come along and you sink and you are given a pregnancy. Maybe your parents will tell you to go to the person who is responsible for the pregnancy. Your age and the age of the person who got you pregnant doesn’t match up. You don’t know his (HIV) status. It’s already messed you up 100%. Your health, education, and life, all of it. (Focus group 13, Young woman 21-24 years)

Social issues included education on pregnancy, the transition from childhood to adolescence to adulthood, prevention of physical, verbal and sexual abuse, talent nurturing, parent and child reproductive health communication, and empowerment of adolescent girls and young women. In terms of the transition from childhood to adulthood, a healthcare worker said:

> They should be well informed and in terms of the changes happening to their bodies, if they have a certain feeling when they are with a man, what that means to them, what certain words like I love you mean to them. They should not only

> hear these words outside but should begin from the parents. (Focus Group 8, Healthcare worker)

An adolescent girl described the need for topics targeting abuse because, "We have to stop sexual abuse. Some of our ages, even if going to school, they are still being sexually abused by the parents, neighbors and boys from school" (Focus Group 3, Adolescent girl 14-17 years) while a healthcare worker described talent nurturing programs stating:

> Their talents need to be nurtured, not all are intelligent. Some may not even have the exposure of going to school due to financial constraints, so for us, even in these groups if we are able to nurture their talents, there are some who like sewing you can help them and that is good. There are some who like singing, whatever they like we should try and nurture and not just oppose everything because of course all of us show that we went to school and we passed but not all even some that we are talking about. (Focus Group 8, Healthcare worker)

Parent and child reproductive health communication was also described with a healthcare worker stating:

> I want to say that in homes as parents we should learn to talk to our children and 7 be open especially on the issues of sex and sexual partners and really discuss with our children and not making it a taboo as if we don't know that's what happens. As parents we should be taught on the developmental stages of children so that we accept what happens at different stages of development of the child. (Focus Group 14, Healthcare worker)

Another important topic from the perspectives of participants was empowerment of adolescent girls and young women with a healthcare worker explaining:

> This group should be empowered. How do we empower them? Offer education. Just like how some of them fear that if they get an STI they cannot say it at home because they are not empowered. They are not able to stand for themselves as to what they will do next and the steps to take after. They need to be empowered to know what to do in different circumstances and report when needed. Some of them are abused especially young mothers. They are abused but do not have the knowledge as to where to go and what to do next. (Focus Group 9, Healthcare worker)

Duration and timing of pre-pregnancy efforts

All participants wanted efforts that were about 1 hour in length in order to keep

participants engaged. Participants stated, “I think it should be a program, say for 1 hour. If a program is short, you tend to like it” (Focus group 15, Partner) and “I think it should be short and to the point because if you prolong it people get bored and will not be listening anymore” (Focus group 9, Healthcare worker). These efforts could mostly be conducted monthly or based on the school terms (once every 3 months).

Location of pre-pregnancy efforts

Location of pregnancy efforts could vary depending on the specific age groups being targeted. If school aged girls are being targeted, then participant identified how efforts could be conducted in schools. Adolescent girls and young women in the study who were out of school preferred programs conducted at clinics, churches, and community halls. A healthcare worker stated, “We can make use of community halls, the infrastructure is already there. There are community halls that are made already. You may not even need transport because we are talking about people within the community so they can just walk to the venue” (Focus group 8, Healthcare worker).

Recruitment

Participants described varying recruitment methods including audio tracks (via the radio), awareness campaigns, government backing, healthcare worker outreach, incentives (i.e. monetary, bicycles, t-shirts), pamphlets, posters, and stickers on commuter omnibuses or combis (local public transportation). A healthcare worker described:

> We should have some sort of awareness campaigns so that at least they are aware. If you just put your things and keep quiet obviously no one will know about it. So awareness campaigns to the schools talk about it, community halls talk about it, in the churches and all those kind of things…I think even putting posters on favorite spots even at the shops and clubs, churches, clinics those places that they usually

> pass through even at ranks and bus stops so that everyone is able to read. Plus the radio. (Focus group 14, Healthcare worker).

Another healthcare worker added, "Government should be involved like the Ministry of Health should be seen showing programs so that people take them seriously" (Focus group 9, Healthcare worker) while an adolescent girl said:

> What about the health workers, the granny's (other name for community health worker) that will be walking around and telling us because if my gran is to tell me, I will listen to her than a flyer on the road. I can be given the flyer by those distributing them and tear it up and throw it away. Maybe I do not even read it, but if it is my gran coming to the house and telling me about the program, I think it is better. (Focus group 4, Adolescent girl 14-17 years).

Facilitators of pre-pregnancy efforts

Participants preferred facilitators of pre-pregnancy efforts to be knowledgeable and experienced females or peers. Nurses were specifically identified as favorable facilitators. A young woman said, "We want it to be an older woman who gives us advice as an older person" (Focus group 11, Young woman 18-20 years), while another young woman added, "Let's say if it is a woman, she may be older or of our age, but she has to have gone through such problems and she tells us she has been through such problems" (Focus group 11, Young woman 18-20 years).

Types of pre-pregnancy efforts

Participants described various efforts that can be implemented to improve the health of adolescent girls and young women before pregnancy. These efforts were described across 10 themes: Clinic programs, community outreach, edutainment, empowerment of adolescent girls and young women, men or partner targeted programs, parental involved or targeted programs, peer education, school programs, technology programs, and youth friendly environments (Table 5.3).

Clinic Programs

Clinic programs included improving and increasing physical health structures, reduced health service fees, and providing clinic nutrition educations days. A healthcare worker explained, "We can also increase the facilities, testing centers, some may not be able to come when there are out reach so that they get access like those who test in the areas that they have access to" (Focus group 8, Healthcare worker). A partner added:

> The registration fee (at ANC) should be reduced a little bit so that it becomes reasonable. What happens is that your wife's pregnancy can even approach delivery without being registered…so, the registration fee should be reduced or even to make it free. That is better because things are difficult. (Focus group 16, Partner)

A young woman explained, "The nearby clinics can choose a day that they educate children between the ages of 14-25 about what they should eat" (Focus group 1, Young woman 18-20 years).

Community Outreach

Participants described community outreach programs that could be implemented that included health promoter outreach, recreation programs, and counseling education. Participants described the potential use of community health workers to reach youth in the community with health education, with a healthcare worker stating, "We also have carders that we use when we want to spread information which are called health promoters. They can go door to door and they will know the area and know the youth and where to find them so all the information if given to them will make sure it is all passed to the youth" (Focus group 14, Healthcare worker). Recreation programs were also identified as a way to keep youth busy and active with a partner describing:

> We can just encourage people to do exercises. In the communities where we live, we have places designated for sports. However, because of economic hardships…we go back to the state of the country's economy on everything. Some places have been closed and others are not well-functioning. So, we are suggesting that those places should be opened. Churches should also hold events such as sports days; these should not be restricted to youths…it should be extended to everybody. That can be helpful…sporting is not expensive; it only requires people's commitment. (Focus group 16, Partner)

Counseling, where adolescent girls and young women are advised one-on-one or in groups was also identified as a community outreach effort that could be conducted particularly among the youth groups at the local churches.

Edutainment

Edutainment was a term used by participants to describe methods of providing health education to adolescent girls and young women in ways that used media and entertainment. A participant said, "Edutainment is important…Entertainment that is productive will help them in the future. At least their mind will be pre-occupied instead of being idle when they are not at home or school or doing something else and also being taught" (Focus group 8, Healthcare worker). Examples of edutainment programs that participants described included, musical performances by famous entertainers, talk shows, writing educational books, radio programming, and road shows.

Empowerment of adolescent girls and young women

Participants described the need to empower adolescent girls and young women in their community, primarily by ensuring that they attend school and complete their education. A young woman stated, "I think to improve the health of young women to prepare them for pregnancy comes from education because there is nothing that you can do without education" (Focus group 13, Young woman 21-24 years). Additional ways participants described to empower adolescent girls and young women in their community

included skills building and training programs, income generating activities, recreation programs, and workshops that could provide adolescent girls and young women with skills to earn an income and support themselves and their families.

Men or partner targeted programs

Participants described the need for partners of adolescent girls and young women to be involved in pre-pregnancy health efforts and also for there to be pre-pregnancy efforts that specifically target these partners. A healthcare worker described:

> I think concurrently a program like this also happening at the men's side for these age groups so that they can also be familiar so that if there are issues such STI's they can be cured together, even like mothers who come and book their husbands should also come as well so that when we are teaching them at ANC on how their blood will be taken, your blood will be screened of diseases from sex and if found such a syphilis then you can begin to get cured together, the mother and the father so that the baby can benefit. It is easier for the father to accept the results from the blood that will have been taken and they start treatments for the HIV. If they come together and get tested for HIV and one is positive it becomes easier because they were both there when it was being spoken of. (Focus group 9, Healthcare worker).

Parent involved or targeted programs

Participants also described the need for parents and guardians of adolescent girls and young women to be involved in pre-pregnancy health efforts and also for there to be pre-pregnancy efforts that specifically target these parents and guardians because they played an important role in influencing adolescent girls and young women's health and health behaviors. These parent targeted programs could also focus on improving parent and child communication about reproductive health. A healthcare worker described:

> As parents we should learn to talk to our children and be open especially on the issues of sex and sexual partners and really discuss with our children and not making it a taboo as if we don't know that's what happens. As parents we should be taught on the developmental stages of children so that we accept what happens at different stages of development of the child. (Focus group 8, Healthcare worker)

Peer education

Peer education was identified as a potential avenue to share information to adolescent girls and young women via video testimonials, support groups, group discussions and camps. A health care worker described:

> We can formulate peer groups or peer educators so that people of that same age group, a certain number of them can be identified for example the community health nurses when we give information where we go, we can identify smart kids that if we give them information on reproductive health they are able to teach other people of the same age group because we are saying this is a special group of people and they listen better to their peers that to people that are more adult to them. (Focus group 8, Healthcare worker).

A young woman added,

> I was thinking that if they do camps where they gather people with various situations. Like if I had a pregnancy at a young age and I am not shy about speaking about my experience, then I can serve as a peer educator...This camp will have various young women like those who had early pregnancies or those who messed up their lives doing things they should not be doing. They should give us advice. (Focus group 11, Young woman 18-20 years)

School Programs

Participants also described how pre-pregnancy health efforts could be conducted at schools since this is where participants felt that younger women could be easily reached. These programs could be implemented in the Guidance and Counseling courses which are offered in some high schools (described in detail in specific aim 2 physical environment results). Participants also suggested collaboration between healthcare workers and teachers for health programs, having resident nurse educators in schools, integrating reproductive health and school curriculums, and hosting school health education days. A young woman said, “The schools in the community, can select a day that they gather children and adults between the ages of 14-25 where they teach them

about health" (Focus group 1, Young woman 18-20 years). A healthcare worker described:

> Maybe we should have a curriculum in the schools that starts at the tender age and further on up to secondary and university level being taught about sexual reproductive health and the consequences and how to prevent sexual activities even prevention of pregnancies. If it starts in the schools with a curriculum that deals with these things maybe it can actually change the behavior of these young women, 14 to 24 years age group. (Focus group 8, Healthcare worker).

Technology programs

Adolescent girls and young women were particularly interested in receiving mobile health education since they described that most adolescent girls and young women had access to a mobile phone. Mobile technology could also be used to access internet resources with an adolescent girl stating, "I can go on internet and note down things that are important and then I can go and tell them, 'oh no' this and this and this. If I teach them that which I know I can then refer those who can search that they can go in this way so that they too can search" (Focus group 2, Adolescent girl 14-17 years). Mobile applications were also seen as a vehicle to provide information with an adolescent girl describing, "This information can be passed through…social networks like internet and app (WhatsApp), we can talk on app (WhatsApp)" (Focus group 5, Adolescent girl 14-17 years).

Youth Friendly Environments

Health care workers described the need for Youth Friendly Corners in clinics and youth friendly groups in schools and churches. A health care worker stated:

> Maybe we can also create like a corner, youth friendly corners, or a desk where this group we are talking about, where they can go and talk. Being told about it and meeting even among themselves they can even come up with issues that affect them. And the solutions to the problems that they come across. (Focus group 9, Healthcare worker).

Another healthcare worker added:

> There must be at least a youth friendly environment and a responsible somebody in the church who is known to be a mother for all who can talk to the girls between that age group, teaching them the risk behaviors and preventive measures to take and this is the age where sexual behavior for example is the major experiment that they do to know what it feels like. (Focus group 8, Healthcare worker).

Ensuring pre-pregnancy effort's effectiveness

Participants described what could potentially make these pre-pregnancy efforts effective which included providing certificates of completion, having community support, evaluating effectiveness of pre-pregnancy efforts, involve men or partners and parents of adolescent girls and young women, peer education, separating targeted age groups, having tangible resources in addition to education, training of educators, and providing transportation to programs.

Resources needed for pre-pregnancy efforts included incentives, jobs, money, and print resources.

Research Question 6: What are participants' views concerning best practices for pre-pregnancy planning?

Best practices for pre-pregnancy planning

According to participants, pre-pregnancy planning efforts should:

- Involve target groups in development and implementation of pre-pregnancy programs.
- Provide an integrated approach to pre-pregnancy health with collaboration of key community stakeholders.

- Acknowledge the strong social ties within communities and their influence on pregnancy-related decisions and practices, and involve social networks and have social network targeted efforts.
- Acknowledge the cultural influences on pregnancy and planning for pregnancy.
- Provide age appropriate information and separate targeted populations by gender and age groups (i.e. 14-17 year olds, 18-20 year olds).
- Address not only specific health conditions and behaviors that affect adolescent girls and young women, but social issues that impact health such as empowerment of adolescent girls and young women, early marriages, and gender-based violence.
- Utilize existing resources to reduce costs. For example, improving existing Guidance and Counseling curriculums in schools to provide pre-pregnancy information, and using existing community centers, clinics, and churches as locations for pre-pregnancy efforts.
- Implement concise and informative approaches that are about 1 hour in length and recur monthly or every three months.
- Utilize creative and entertaining methods to keep participants engaged such as edutainment and mobile technology

Discussion

Specific aim 3 explored participants' views concerning specific health conditions or behaviors that could potentially be addressed through pre-pregnancy efforts and the preferred methods for delivering the intervention in addition to participants' views concerning best practices for pre-pregnancy planning. Focus group discussion results

point towards multiple targeted approaches that begin among school aged adolescents through school-based age appropriate pre-pregnancy approaches. Guidance and Counseling classes described by participants were not available in all schools and there was no standard curriculum across the schools where these classes were available. These classes present a potential avenue utilize existing resources and to standardize and provide pre-pregnancy education in these urban schools. Approaches are also needed to address participant's concerns that educating adolescent girls about reproductive health will increase early pregnancies and risky sexual behavior.

Participants identification of social issues such as education on pregnancy, the transition from childhood to adolescence to adulthood, prevention of physical, verbal and sexual abuse, talent nurturing, parent and child reproductive health communication, and empowerment of adolescent girls and young women as potential pre-pregnancy topics point to a need to expand pre-pregnancy approaches beyond health conditions and health behaviors. Particularly with respect to education of adolescent girls as the length of education is decreasing in light of socio-economic climate (Dunbar et al., 2014). In addition, our sample was an urban sample with relatively high levels of education and lower education levels may have been identified in a rural sample.

The involvement of social networks in pre-pregnancy efforts was also a recurring theme across participant groups with recommendations for parental and partner targeted pre-pregnancy efforts. The involvement of these important others has also been identified across the literature as potentially positively impacting health (Aguiar & Jennings, 2015; DiClemente et al., 2001). Involving participants in all phases of pre-pregnancy efforts was also identified as an important factor to the success of these efforts. Participant and

community involvement could potentially increase buy-in to pre-pregnancy efforts and empower communities to take ownership of their health and contribute to positive health and health outcomes.