KNOWLEDGE AND PERCEPTION OF BIRTH AND EMERGENCY PREPAREDNESS AMONG PREGNANT ADOLESCENTS IN NDOLA DISTRICT, ZAMBIA

BY

JUNESS KACHIMBA RN/RM/ Bsc. NURSING

A Dissertation submitted in partial fulfilment of the requirements for the award of

Degree of Master of Science in Midwifery, Women's and Child Health Major

The University of Zambia

LUSAKA

2019

DECLARATION

I **Juness Kachimba** declare that this Dissertation is my own work and that all sources I have quoted have been indicated and acknowledged using complete references. I further declare that this dissertation has not been previously submitted for a Diploma, a Degree or for any other qualifications at this or any other University. It has been written according to the guidelines for Masters of Science in Midwifery, Women's and Child Health degree dissertations of the University of Zambia.

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I Dr Catherine M Ngoma, having supervised and read through this dissertation, am satisfied that this is the original work of the author under whose name it is presented. I also confirm that the work has been completed satisfactorily and approve this dissertation for final submission.

Supervisor's Name: _____

Supervisor's signature: _____

Date: _____

HEAD OF DEPARTMENT

Department of Midwifery and women's health, School of Nursing Sciences, University of Zambia

Name_____

Signature_____

Date_____

APPROVAL

The University of Zambia approves this Dissertation by Juness Kachimba (on KNOWLEDGE AND PERCEPTION OF BIRTH AND EMERGENCY PREPAREDNESS AMONG PREGNANT ADOLESCENTS IN NDOLA DISTRICT, ZAMBIA) in partial fulfilment for the requirements for the award of Master of Science in Midwifery, Women's and Child Health degree.

Examiner I

Name_____

Signature_____ **Date**_____

Examiner II

Name_____

Signature_____ **Date**_____

Examiner III

Name_____

Signature_____ **Date**_____

Chairperson Board of Examiners_____

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Supervisor_____

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ABSTRACT

The risk of maternal mortality and complications in pregnancy is highest for adolescent girls in sub-Saharan Africa and is a leading cause of death among adolescent girls. In Zambia, adolescent pregnancy rate is high and stands at 28.5% and maternal mortality rate is at 398 per 100 000 live births. Despite adolescents' high risk for pregnancy-related complications antenatal care (ANC) uptake is believed to be low among adolescents as they start attending antenatal care late or never. Studies have shown that most adolescents do not attend the recommended ANC visits hence missing out on birth and emergency preparedness (BEP) messages. The objective of this study was to determine the levels of knowledge and perception of birth and emergency preparedness among pregnant adolescents in Ndola District, Zambia.

A descriptive cross-sectional study that employed a quantitative approach was conducted in four (4) urban Health Centres in Ndola District, Zambia between October and November, 2018. A total of 124 pregnant adolescents aged between 10 to 19 years were selected by simple random sampling method. A semi-structured interview schedule was employed for data collection. Pregnant adolescents were interviewed one at a time. Statistical Package for Social Sciences (SPSS) version 24.0, Excel and Stata version 14 were used for data analysis. Chi-square tests was done to examine associations between variables. P-values < 0.05 was considered significant at 95% confidence level.

Overall, 66.13% of the pregnant adolescents had low levels of knowledge of Birth and Emergency Preparedness, 33.87% had medium knowledge, and unfortunately none among pregnant adolescents had high levels of knowledge of BEP. About perception 74.2% of the pregnant adolescent mothers had a positive perception of BEP. ANC visits, parity and BEP key components were the predictors for knowledge and perception of BEP among adolescents as they had statistical significant association with BEP (p-value =0.001, 0.014 and <0.0001) respectively.

Knowledge of BEP in the study area was found to be low among pregnant adolescents. It would have been preferred that majority were knowledgeable of BEP. There is need for corrective measures to address the low levels of knowledge of BEP among pregnant adolescents to help reduce neonatal and maternal morbidity and mortality burden in the country.

Key Words: Knowledge, Perception, Birth and Emergency preparedness, pregnant adolescents.

ACKNOWLEDGEMENT

My sincere gratitude goes to my supervisor, Dr Catherine M Ngoma, for her competent guidance and support throughout the process of conducting this study.

My gratitude also goes to Ms Mutinta Muleya, the co-supervisor, for her guidance and support that was rendered to me during the process of conducting this study

My gratitude goes to the School of Nursing Sciences, UNZA, for support and guidance and indeed to all Lecturers at the school without them I wouldn't have advanced in conducting this study.

I also wish to thank, most sincerely, the management at Ndola District Health Office and the staff in the four (4) health centres (Chipokota Mayamba, Kawama, Mapalo and Lubuto) for their support and for allowing me to conduct this study. Thank you to the pregnant adolescent mothers in the four health centres for their valuable responses which made this study possible.

I would also like to thank Mr Zimba and Nelia Langa for their guidance and expertise during statistical analysis of the data. I am also thankful to Mr Emmanuel Musenge, Mr Fabian Chapima and Ms Mutinke Zulu for their valuable guidance during the process of conducting this dissertation. I am grateful to all my friends and colleagues too numerous to mention for their support throughout the entire period of my study. Lastly, my gratitude goes to my husband (Joseph

Ng'ambi) and my children for their everlasting love, endurance and encouragement throughout the process of conducting this study.

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ABBREVIATIONS

ANC	Antenatal Care
BEP	Birth and Emergency Preparedness
BPCR	Birth Preparedness and Complication Readiness
CSO	Central Statistical Office
DHMT	District Health Management Team
GNC	General Nursing Council
HBM	Health Belief Model
HIMS	Health Information Management System
IEC	Information Education and Communication
KAP	Knowledge, Attitude and Practice
MCH	Maternal and Child Health
MoH	Ministry of Health
MNCH	Maternal, Neonatal and Child Health
UN	United Nations
UNFP	United Nations Population Fund
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund
WHO	World Health Organization
ZDHS	Zambia Demographic Health Survey

CHAPTER ONE: INTRODUCTION

1.1: Background Information

The risk of maternal mortality and complications in pregnancy is highest for adolescent girls in sub-Saharan Africa and is a leading cause of death among adolescent girls (UNICEF, 2016). Worldwide adolescent pregnancy remains very prevalent, particularly in the poorest countries and this childbearing has a negative impact on the health of the adolescents and their infants; individual social and economic effects; and the society. In Zambia, adolescent pregnancy rate is high and stands at 28.5% and maternal mortality rate is at 398 per 100 000 live births (ZDHS, 2013-2014).

It has been a problem to monitor and give quality care to adolescents as coverage of maternal health indicators, including contact with health system and quality of care appear consistently lower among adolescents than older women, particularly in sub-Saharan African and South Asia **Error! Bookmark not defined.**.

The World Health Organization (WHO) predicts a world where every pregnant woman and new-born receives quality care throughout the pregnancy, childbirth and the postnatal period. Within the continuum of reproductive health care, antenatal care (ANC) provides a platform for important healthcare functions, including health promotion, screening and diagnosis, and disease prevention. It has been established that, by implementing timely and appropriate evidence-based practices, ANC can save lives (WHO, 2016).

However, global estimates indicate that only about half of all pregnant women including adolescents receive this recommended amount of care. Approximately 303 000 women and adolescent girls died as a result of pregnancy and childbirth-related complications in 2015. Therefore, women's positive experiences during ANC and childbirth can create the foundations for healthy motherhood which can be done through Birth and emergency preparedness (BEP).

BEP is the process of planning for normal birth and anticipating actions needed in case of emergency and is a strategy to improve the use of skilled providers at birth and the key intervention to decrease maternal mortality (Kumadi, 2015). Despite having recommendations

and guidelines on antenatal care, WHO reported in 2016, at the start of the Sustainable Development Goals (SDGs) era, that pregnancy-related preventable morbidity and mortality remains unacceptably high.

Pregnant adolescent women face heightened biological risks associated with early pregnancy and childbirth, and may also be in more precarious social situations (Lindsey & Melanie, 2015). They are more likely to be stigmatized due to early pregnancy, and as a result, may have lower levels of family and social support as compared to older women. They may delay pregnancy disclosure out of fear of being forced by administration to leave school (Pell et al., 2013).

Despite adolescents' high risk for pregnancy-related complications ANC uptake is believed to be low among adolescents in Sub-Saharan Africa including Zambia as pregnant adolescents start attending antenatal care late or never. However, Adolescent girls increased risk of death during pregnancy or childbirth might be due to the non-use of BEP (WHO, 2018). Therefore, this study sought to assess knowledge and perception of birth and emergency preparedness among pregnant adolescents age group (10–19) in Ndola District on the Copper belt Province, Zambia.

1.2: Statement of the Problem

Worldwide, pregnancy related complications are the second leading cause of death among adolescent girls and remain a major contributor to maternal and child mortality, and to the cycle of ill-health and poverty (WHO, 2014). Zambia is not an exception because its maternal mortality ratio stands at 398 deaths per 100,000 live births (ZDHS, 2014). WHO recommends that a pregnant woman without complications should have at least 4 ANC visits (UNICEF, 2015). The 4 ANC visits incorporates the concept of BEP as an essential part of the antenatal care package and the strategies are aimed at reducing delays in seeking, reaching, and receiving care (August, et al., 2015). Pregnant adolescent's inadequate utilization of ANC services and inadequate access to skilled birth attendants is a concern in Zambia (WHO, 2015). However, missing out on BEP may cause severe health problems for both adolescent mother and child.

Despite the fact that BEP is essential for further improvement of maternal and child health and prevention of maternal deaths, little is known about the status of knowledge and perception of BEP among pregnant adolescents in Ndola District. To help fill this gap this study assessed knowledge and perception of BEP among pregnant adolescents in Ndola District, Zambia.

1.3: Study Justification

BEP promotes maternal healthcare service utilization to ensure safe motherhood by reducing the delay in deciding to seek care, reaching facility and receiving timely care. This study specifically assessed knowledge and perception of BEP among pregnant adolescents in Ndola District, Zambia. There was need to know adolescents' level of knowledge and perception of BEP as they constitute a high numbers among childbearing age and are at risk of maternal mortality and complications in pregnancy.

This study identified some gaps in knowledge of BEP among pregnant adolescents that need to be addressed through information, education and communication which will help to reduce the country's burden of maternal mortality. The results of this study will also provide valuable information for design of possible programs and interventions to improve maternal and neonatal health among adolescents.

Therefore, the study was timely as it has provided evidence of levels of knowledge and perception of BEP among pregnant adolescents in Ndola District, Zambia. The study has provided evidence to help to reduce the country's burden of maternal mortality. The findings will benefit Government to formulate policies to strengthen programmes as well as advocate for best practices and improve service delivery to the adolescents. The study has also contributed to a scientific body of knowledge for evidence based practice as it serves as baseline information for further studies.

Many studies have been carried out to assess knowledge and perception of BEP among pregnant women and most of which have not been age specific but the researcher focused on adolescents (10 -19 years) due to their high risk for pregnancy-related complications.

1.4: Study Questions

1.4.1. What is the level of knowledge among pregnant adolescents of birth and emergency preparedness?

1.4.2. What is the perception among pregnant adolescents of birth and emergency preparedness?

1.5: Study Objectives

1.5.1: General Objective

To determine knowledge and perception of Birth and Emergency preparedness among pregnant adolescents in Ndola District, Zambia.

1.5.2: Specific Objectives

1. To assess the knowledge of birth and emergency preparedness among pregnant adolescents in Ndola District, Zambia.
2. To establish the perception of birth and emergency preparedness among pregnant adolescents in Ndola District, Zambia.
3. To determine association between knowledge on BEP and perception on BEP among pregnant adolescents in Ndola District, Zambia.

1.6: Conceptual Definitions

Adolescents: are those people between 10 and 19 years of age (WHO, 2014).

Birth and Emergency Preparedness: is the process of planning for normal birth and anticipating actions needed in case of emergency (Muhammedawel & Mesfin, 2014).

Knowledge: is the condition of knowing something with familiarity gained through experience or association (Merriam, 2018).

Perception: is the organization, identification and interpretation of sensory information in order to represent and understand the presented information, or environment (Goldstein, 2009).

1.7: Operational Definitions

Birth and Emergency Preparedness: is when a pregnant adolescent has made three and more arrangements of the components of birth and emergency preparedness, such as identifying available transport, setting aside money to pay for service fees and transport, identify place of delivery, identify skilled attendant and identifying blood donor. Birth and Emergency

Preparedness will be measured by asking the respondents five (5) item questions. The total score for BPs will be 5.

Knowledge: is awareness of the existence of birth and emergency preparedness, its importance and effectiveness. Knowledge was measured by asking the respondents 11 questions and responses were assigned scores. The total score for knowledge was 11. The scores of 8 -11 were considered as high knowledge, scores of 4-7 were considered as medium knowledge and scores of 0-3 were considered as low knowledge.

Perception: is pregnant adolescents' ability to be aware of BEP through their senses. The respondents were asked 3 questions on perception of BEP. The maximum score on perception was 18 and scores of 10-19 on perception were measured as positive and scores of 0-9 were measured as negative perception.

1.8: Study Variables

1.8.1 Dependent Variable

Birth and Emergency Preparedness

1.8.2 Independent Variable

Knowledge of Birth and Emergency Preparedness

Perception of Birth and Emergency Preparedness.

Table 1: Variables and Cut off Points

Variable	Variable	Scale	Scale of Measurement/Cut-off Points	Measurement scale	Question Number
Dependent	Birth and Emergency Preparedness	Yes	Score between 3 -5 package of interventions was categorized as prepared. Score of 0-2 package of interventions was	Binary	20

		No	categorized as not prepared.		
Independent					
	Knowledge of birth and emergency preparedness	Low Medium High	Scores of 0-3 Scores of 4-7 Scores of 8-11	Ordinal	14 - 16
	Perception of birth and emergency preparedness	Positive Negative	Scores of 10-18. Scores of 0-9.	Binary	19 -21

1.9: Conceptual Framework

This study will use Health Belief Model (HBM) for understanding and predicting health behaviour of pregnant adolescents. HBM is a good model for this study as it will provide a way to understanding and predicting how adolescents will behave in relation to their health and how they will comply with health care therapies. The HBM is based on the understanding that pregnant adolescents will take a health-related action (i.e., use birth and emergency preparedness) in this case if the pregnant adolescent:

1. Feels that a negative health condition (i.e., pregnancy related complications such as neonatal death) can be avoided.

2. Has a positive expectation that by taking a recommended action, she will avoid a negative health condition (i.e., using birth and emergency preparedness will be effective at preventing pregnancy related complications).
3. Believes that she can successfully take a recommended health action (i.e., she can use birth and emergency preparedness comfortably and with confidence).

The HBM has six (6) main constructs (See Figure 1) that influence people's decisions to take an action to prevent, screen for and control illness/condition. The constructs state that people (i.e. Pregnant Adolescents) are ready to act if they have knowledge of:

Perceived Susceptibility: An individual's assessment of risk of getting the condition or disease. People will not change their health behaviours unless they believe that they are at risk. Pregnant adolescents who believe that are at risk of pregnant related complications can change their behaviours. In this study, attitudes and beliefs of pregnant adolescents towards birth and emergency preparedness will be assessed in relation to pregnant adolescent's socio-cultural beliefs and demographic characteristics.

Perceived severity: Even when a pregnant adolescent recognizes personal susceptibility, action will not occur unless she perceives the severity to be high enough to have serious maternal complications. Knowledge and perception of the magnitude, seriousness and adverse health consequences of not utilizing birth and emergency preparedness will compel pregnant adolescents to believe that the consequences of developing pregnant related complications are significant enough to try to avoid.

Perceived benefits: Pregnant adolescents believe that the recommended action of using birth and emergency preparedness would protect them from getting pregnant related complications. Pregnant adolescents are more likely to take up birth and emergency preparedness if one believes that early and frequent ANC attendance will minimize risk and severity of illness and complications.

Perceived Barriers: Pregnant adolescents identify their personal barriers to utilization of birth and emergency preparedness (i.e., they maybe too embarrassed to be seen pregnant, long

distance to walk, long waiting times, Cost of transport, confirmation of pregnancy, alerting others to status, dislike for medications or services, having to leave school) and explore ways to eliminate or reduce these barriers.

Cues to Action: It includes the desire to comply with strategies to activate "readiness". Birth and Emergency Preparedness uptake is more likely if a pregnant adolescent receives reminders or public health messages promoting the use of Birth and Emergency Preparedness through media, campaigns, school and key social referents.

Self-Efficacy: This is the confidence in one's ability to take action towards a health related change. Confidence in a pregnant adolescent's ability to take action. Birth and emergency preparedness uptake is more likely if a pregnant adolescent believes that she is capable of overcoming barriers and accessing Birth and Emergency Preparedness (assertive, self-assured).

Reasons for Choosing the Health Belief Model

The Health Belief Model is a framework for motivating people to take positive actions that uses the desire to avoid a negative health consequence as the prime motivation. This model can be applied to my study. For example inadequate Birth and Emergency preparedness is a public health problem with negative consequences on adolescent girls and children. The desire to avoid the negative health consequences of inability to have Birth and Emergency preparedness may lead to adolescent girls developing pregnancy related complications such as haemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy and obstructed labour. It's important to note that avoiding the negative health consequences is a key element of the HBM. It can further be used for developing health education strategies and prevention programs.

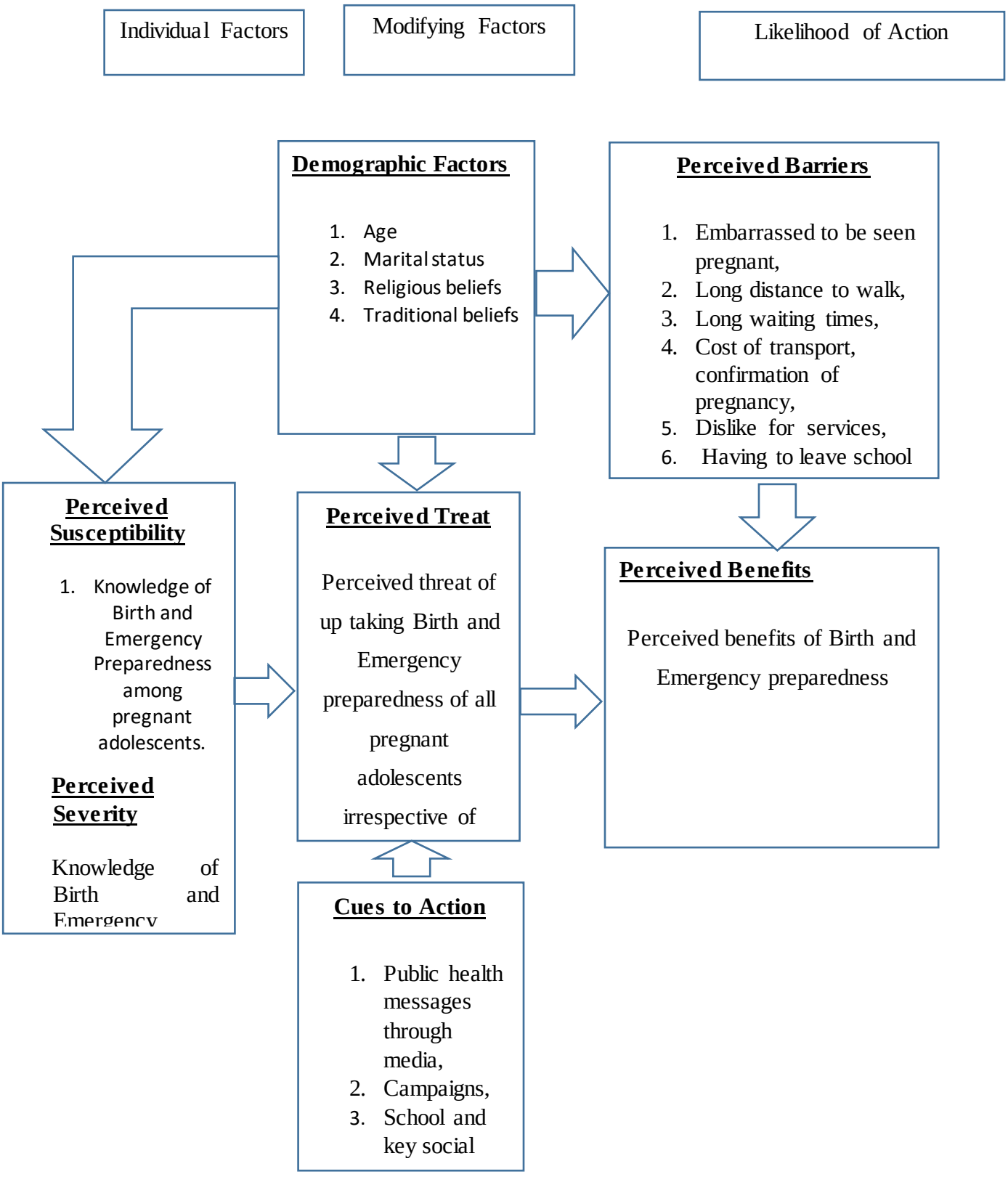

Figure 1: Conceptual Framework of the Health Belief Model (HBM)

Source: (Moattar M, 2014)

CHAPTER TWO: LITERATURE REVIEW

2.1: Introduction

This chapter presents a review of literature on other studies done on knowledge and perception of birth and emergency preparedness among pregnant adolescents. The literature review is presented according to the study variables which include; birth and emergency preparedness, knowledge, perception, socio-demographic and obstetric variables such as mother's age, marital status, level of education, employment status, gravid, parity, number of ANC visits.

The sources of this literature include published articles from computerized database such as Google scholar and PubMed. Other sources include WHO publications and some midwifery textbooks. The major search terms used were birth and emergency preparedness, knowledge and perception of BEP.

2.2: Overview of Birth and emergency preparedness

Birth and emergency preparedness is observed to be a necessity for every woman and the new-born baby and it is a key strategy in safe motherhood programmes. Its elements have an association with increased use of a skilled provider at birth as well as in limiting undue delays. The key elements include recognition of danger signs, a plan for skilled birth attendant, a plan for the place of delivery, and saving money for transport or other costs, identification of a potential blood donor and assistant during labour (Ukaegbu & Uzochukwu, 2014).

It is difficult to predict which pregnancy, delivery or post delivery period will experience complications; hence birth and emergency preparedness plan is recommended with the notion of pregnancy is risky (Markos, 2014). Birth preparedness is a fundamental component of antenatal care whose aim is to reduce unnecessary delays to seek emergency obstetric care in order to improve maternal and foetal outcomes (Lawan & Ishaq, 2015). Therefore, knowledge about pregnancy complications and recognizing the signs of complications should be widely disseminated to pregnant adolescents, their families and the community at large. It may provide the route for ensuring that pregnant adolescents deliver with the assistance of a skilled health-care provider and have access to support and services for routine as well as emergency care throughout pregnancy, childbirth and during the postpartum period (Mangiaterra & McClure, 2008).

2.3: Information Education and Communication (IEC) to Adolescents on Birth and Emergency Preparedness

One of the most important functions of ANC is to offer pregnant adolescents advice and information about birth and emergency preparedness. Education on birth and emergency preparedness is very important in analysing the decision of whether to seek care at health facility or not. Pregnant adolescents need to be empowered with knowledge on birth and emergency preparedness through information education and communications (IEC) to improve healthy behaviours. Health communication campaigns globally are used to provide information about health services and encourage healthy behaviours. They are also used to change cultural and social norms and attitudes, and assist people achieve better health outcomes through the use of essential health services (UNICEF, 2015).

A study was conducted in 19 Sub-Saharan African countries on Providing Information on Pregnancy Complications during Antenatal visits. The study revealed low percentage of pregnant adolescents and older women receiving information about postnatal complications of pregnancy during ANC visits. Further it was indicated in this study that uneducated teenagers and rural women were less likely to have been advised compared with women aged 24-34 years. The study showed that the likelihood of recalling information among pregnant teenagers and older women increased with the number of ANC visits.

The Ministry of Health, Zambia has adopted the use of IEC as a communication strategy to encourage the uptake of maternal, neonatal and child health services. To this effect, a Communication and Advocacy Strategy has been developed to guide communication activities that are implemented at national, provincial, district and community levels.

2.4: Birth and Emergency Preparedness

Birth and Emergency Preparedness messages are delivered to pregnant mothers can be done through regular attendance of ANC. This provides an opportunity for health care providers to address both the clinical and psychosocial risks faced young pregnant women. A study conducted in Ghana by Lenters & Barwick, (2015) on Perception and Experiences of Pregnant adolescent mothers accessing ANC enhancing Health Centre Services showed that adolescents had intense feelings of shyness and apprehension about attending clinic, based on their understanding that they are not yet ‘of age’ to be pregnant. Furthermore the study showed that

the most important way to improve the adolescents' experience of ANC is to create a friendly environment, where they will feel at ease (Lenters & Barwick, 2015).

A study conducted in Ghana and Tanzania by Lenters (2015), showed low ANC uptake among adolescents than older women. This was attributed to late initiation of ANC in pregnant adolescents therefore miss the opportunity to attend the first few recommended visits (Lenters & Barwick, 2015). Similarly a study conducted by Markos & Bogale, (2014) stated, older women were more likely to seek maternal healthcare than younger women.

Another study was conducted in south-eastern Tanzania by Gross and others on timing of antenatal care for adolescent and adult pregnant women. The study showed greater delay in ANC initiation among adolescents than adult pregnant women. However, first ANC attendance at four months is recommended, so it is likely that many adolescents missed important services offered during ANC such as preventive health measures, risk screening and health education (Gross, et al., 2012). This imply therefore; that most adolescents miss the opportunity to attend the first few recommended visits that are meant to help them be prepared for birth and emergencies. The findings of this study is inconsistent with the study conducted in South Africa by Governder et al., (2018) on Obstertric Outcomes and Antenatal Access Among Adolescent Pregnancies. The study revealed that adolescent pregnancy was associated with late booking and reduced ANC visits which was a risk for adverse maternal health outcomes. Lack or reduced ANC visits represents missed health care screening opportunities and messages on birth and emergency preparedness (Governder & Ghuman, 2018).

2.5: Knowledge of Birth and Emergency Preparedness

Knowledge on Birth and emergency preparedness promotes maternal healthcare service utilization to ensure safe motherhood by reducing the delay in deciding to seek care, reaching the health facility and receiving timely care. Despite having health communication campaigns globally on birth and emergency preparedness studies conducted in other countries have shown low knowledge on birth and emergency preparedness among adolescents.

A study conducted in Ethiopia by Bitew (2016), assessed the status of Birth Preparedness and Complication Readiness Practice and Factors among Pregnant Women. The study showed low knowledge levels of BPCR among pregnant women (Bitew & Chekol, 2016). Similarly a study

conducted in Zambia by UNICEF (2015), assessed the levels of knowledge and practice among adolescents and the purpose of this study was to explore reasons for the low uptake of ANC. In this study adolescents did not display good knowledge of danger signs of pregnancy and was attributed to the number of times the mother went for antenatal care.

2.6: Perception of Birth and Emergency Preparedness

A study conducted in Nepal by Tilghman (2008), on adolescent's Perspective of Prenatal Care showed that pregnant adolescents either do not attend ANC or attend late and infrequently. This was attributed to lack of knowledge, lack of power to take decisions, lack of money, or cultural factors including local concepts of illness. A study conducted in Guinea Brazier et al (2014), on Rethinking How to Promote Maternity Care Seeking explored exposure to interventions promoting birth and complication readiness among women. The study revealed that women's knowledge about birth preparedness was associated with increased preparation for birth (Brazier, et al., 2014). This imply that knowledge will increase women's perception about birth and emergency preparedness.

2.7: Conclusion

From the literature reviewed, adolescents' BEP has been shown to be influenced by various factors such as number of times the mother went for antenatal care. A number of studies have been conducted regarding birth and emergency preparedness among pregnant mothers and the findings have shown that most adolescents do not attend the recommended ANC visit hence missing out on BEP messages. Furthermore, the reviewed studies have not been age specific within the context of ANC service hence the perspectives of adolescents have not been prominently presented.

CHAPTER THREE: METHODOLOGY

3.1: Introduction

This chapter discusses research methodology under the following headings; study sites, study population, study design, inclusion and exclusion criteria, sampling, data management, pilot study and study limitation.

3.2: Study design

This was a descriptive cross-sectional study design that employed a quantitative approach. The study described knowledge and perception of adolescents on birth and emergency preparedness without manipulating the variables.

3.3: Study Setting

This study was be conducted in four urban Health Centres in Ndola District on the Copper-belt Province of Zambia. The four urban health centres are among the centres in the district with low ANC up take and high health centre deliveries among adolescents. The health centres provide reproductive and child health care that include antenatal, deliveries and postnatal care services. On average about 50 adolescent clients attend the facilities for antenatal care and 100 institutional delivery each month at each respective selected health centre.

3.4: Target Population

The target population for this study was all pregnant adolescents that came for ANC visit.

3.5: Study Population

The study population comprised of all pregnant adolescents who reside in Ndola District, Zambia.

3.6: Sample Selection

Purposive sampling method was employed when selecting four (4) health facilities where participants were drawn from since these 4 health facilities provide services to the majority of the population with different socioeconomic status in the district and they all operate 24 hour service from Monday to Sunday. The participants were selected from among the antenatal women who

came for antenatal visits each day. The participants were randomly selected using simple random sampling method at each health centre. After obtaining permission from the clinic in-charge, the principal researcher reviewed antenatal cards for maternal age. All pregnant women who were between 10 and 19 years of age were included in the study. The identified women who were eligible to participate in the study were informed about the study and asked for the consent. Participants were interviewed in private rooms until the required sample size was achieved.

3.6.1: Inclusion Criteria

All pregnant adolescent mothers aged between 10 and 19 who came for ANC booking and revisits residing in the catchment area, available at the time of study and were willing to participate in the study by informed voluntary consent were eligible to be included in the study. The mothers who were above the age of 18 years and were willing to give written consent to participate in the study were eligible. Adolescent mothers under the age of 18 years but willing to participate in the study whose parents/guardians were available to grant them permission to participate in the study were eligible.

3.6.2: Exclusion Criteria

All pregnant adolescents who were unwell and those who were in labour were excluded from taking part in the study. Pregnant adolescent mothers, below the age of 18 years who were willing to participate in the study but whose parents or guardians were unavailable to grant them permission to participate in the study were also excluded from the study.

3.7: Sample Size

The sample size was determined using single proportion formula. The following assumptions was used: a level of confidence 95%, a 5% margin of error and 50% proportion of pregnant adolescent mothers prepared for birth. The sample size was estimated using Kish Leslie formula for quantitative studies (Mwilike, 2013). The formula state that:

$$n = \frac{Z^2 P(1-P)}{D^2}$$

Whereby:

n =Sample Size

D= The standard error in the study, which is 5%

P= Prevalence of Birth Preparedness among adolescents is 8.9%.

Z= The standard normal deviation of 1.96 corresponding to 95% confidence interval.

Substituting:

$$n = \frac{1.96^2 X\ 8.9(1-8.9)}{0.05^2}$$

Therefore, the estimated sample size was 124 pregnant adolescents.

3.8: Data Collection Tool

A semi-structured interview schedule was administered on pregnant adolescent women and questions were asked in a standardised order. The tool comprised three (3) sections, section A had the respondents' demographic data, and section B had respondents' knowledge of birth and emergency preparedness and section C had respondents' perception of birth and emergency preparedness. The tool included a variety of closed ended and a few open ended questions and all questions were asked to each participant in the same sequence. The interviewer did not deviate from the interview schedule.

3.8.1: Validity

Extensive literature review was conducted on recent literature on Birth and Emergency Preparedness. Expert midwives and the research supervisors examined the questions to determine whether they were able to elicit the desired responses on the variables that were being measured so that conclusions were to be drawn with respect to the study population. All the questions were constructed in a simple, clear and precise way in order to give respondents

chance to give clear and precise answers which brought out their knowledge and perception towards Birth and Emergency Preparedness.

3.8.2 Reliability

A variety of closed ended and a few open ended questions were used and all questions were asked to each participant in the same sequence. A pilot study was conducted on 12 nonparticipating pregnant adolescents who came for ANC clinic and was calculated using 10% of the actual study sample size to check whether the instrument was able to bring out consistent information about levels of knowledge and the perception of Birth and Emergency preparedness among pregnant adolescents. Adjustments to the data collection tool was then made appropriately. During data collection the pregnant adolescents were informed of the purpose of the interview and need for them to respond truthfully. The questions were administered in the same order to all pregnant adolescents, one at a time in a private room to make them feel secure and at easy when answering the questions.

3.9: Data Collection Technique

Data was collected from pregnant adolescents for a period of four weeks from 8th October to 26th October, 2018. The researcher conducted face to face interviews with each pregnant adolescent at a time in a private room. The researcher started by greeting the participant, made them sign the consent form and then explained the purpose of the study and proceeded with the interview.

Confidentiality was assured with the use of unique identification codes and not names. Verbal and written Consent was obtained before conducting the interview. The participants were informed that participation was voluntary and that they were free to decline participation or withdraw from the study at any point, without giving any explanations or fear of receiving a penalty.

Questions were read out to the participants and those which were not understood were read again without directing the participant to the answer. Clarifications on questions not fully understood were made and responses were immediately written down on the interview schedule to avoid missing out relevant data. About 8 pregnant adolescent mothers were interviewed each week at

each health facility with each interview taking approximately 15 to 20 minutes. None of the respondents who met the inclusion criteria declined to be interviewed. After the interview, the interviewer thanked each of the respondents for participating in the study.

The anxious respondents were handled tactfully, friendly and empathetically. At the end of the interview each respondent was thanked.

3.10: Ethical Consideration

Ethical approval was obtained from Ethical Review Committee of University of Zambia. Letter of support was obtained from Ndola District Health Management Offices before undertaking the study and written informed consent was obtained from each respondents after explaining the content of participant information sheet during data collection. An assent form was provided for the under-age respondents. For Privacy and confidentiality, all interviews were conducted in privacy and all cautions were taken to ensure confidentiality. The right of the respondents to refuse to participate in the study was respected. Respondents were provided with information on importance of birth and emergency preparedness. The pregnant adolescents were interviewed one at a time in a private room to make them feel secure and free and be able to answer sincerely without feeling of intimidation. The respondents were also informed that participation in the study was purely on voluntary basis and no form of payment or incentives were to be provided to them.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter describes the data analysis and presentation of the findings of the study conducted to determine the levels of knowledge and perception of BEP among pregnant adolescents in Ndola District, Zambia. The findings are presented in order of the research questions.

4.2 Data analysis

After data were collected, the interview schedules used were counted and checked for completeness and legibility. Data were entered into a password protected excel sheet before exporting to SPSS version 24.0 and STATA version 14 for coding and analysis. Closed ended questions were assigned numerical codes and entered into the computer and analysis was carried out using SPSS windows version 24.0. This allowed the researcher to report percentage of respondents giving answers that fall in each category.

Descriptive statistics were used to summarize data. Chi-square tests was done to examine associations of study variables. P-values < 0.05 was considered significant at 95% confidence level. Bivariate analysis was done to determine significant association and multiple variable logistic regression analysis was done to control for confounding variables. Unadjusted and adjusted odds ratios were used to measure the strength of association.

4.3 Presentation of Findings

The findings have been presented in three sections according to the study objectives. These sections include; Section A: Social demographic characteristics of respondents, section B: Knowledge of BEP and section C: Perception of BEP. The findings have been presented in frequency tables, pie charts, bar charts and cross tabulations.

4.3.1: Section A: Social Demographic Characteristics of Respondents

This section focuses on age, marital status, level of education, religion, employment status, gravid, parity and number of ANC visits.

Table 2 a shows that the respondents' age ranged between 15 and 19 years and majority were aged between 18 and 19 years. The table also shows that more than half (58%) of the respondents were married and majority (60%) had attended secondary education.

Table 2 a: Social Demographic Characteristics of Respondents

Variable	Frequency	Percent
Age		
15	1	1
16	3	2
17	24	19
18	45	36
19	51	41
Total	**124**	**100**
Marital status		
Single	52	42
Married	72	58
Total	**124**	**100**
Education Level		
Never been to school	4	3
Primary	41	33
Secondary	74	60
Tertiary	5	4
Total	**124**	**100**

Table 2 b shows that majority (98%) of the respondents were Christians only (2%) were Moslems. As regard to employment status majority (94%) of the respondents were unemployed.

Table 2 b: Social Demographic Characteristics of Respondents

Variable	Frequency	Percent
Religion		
Christians	121	98
Moslems	2	2
Total	**124**	**100**
Employment status		
Un employed	117	94
Employed	7	6
Total	**124**	**100**

Table 3 a: shows that more than half (54.03%) of the respondents were pregnant for the first time and less than half (45.97%) had delivered once or more.

Table 3 a: Respondents obstetric history

Variable	Frequency	Percent
Gravid		
One	67	54.03
Two or more	57	45.97
Total	**124**	**100**
Parity		
None	67	54.03
One or more	57	45.97
Total	**124**	**100**

Table 3b: shows that out of 124 respondents only 22.6% had attended ANC visits three or more times. With regards to gestational age of respondents' current pregnancies at the first visit to ANC the table shows that 17.61% reported for first ANC visit from 0 -3 months pregnant. The table also shows that majority (69.35%) of the respondents reported for first ANC visit late from 4 -6 months and only a few (5.65%) reported very late for first ANC visit from 7 – 9 months pregnant.

Table 3 b: Respondents obstetric history

Variable	Frequency	Percent
Number of ANC visits		
One	65	53.4
Two	31	25
Three or more	29	22.6
Total	**124**	**100**
Gestational age of current pregnancy before start of ANC		
0 – 3 months	22	17.61
4 – 6 months	86	76.35
7 – 9 months	7	5.65
Total	**124**	**100**

4.3.2: Section B: Knowledge of birth and emergency preparedness of Respondents

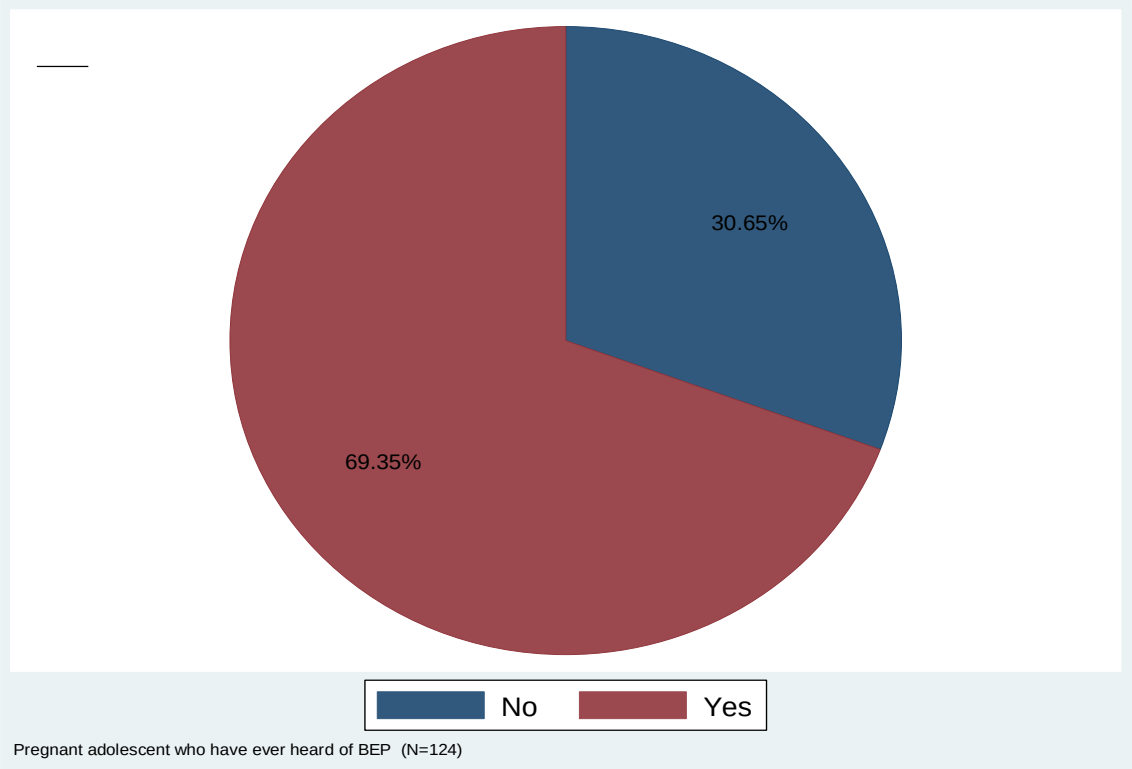

Figure 2: Pregnant adolescents who had heard of BEP before

Figure 2 shows that most (69.35%) of the respondents had heard about BEP while 30.65% had never heard of BEP.

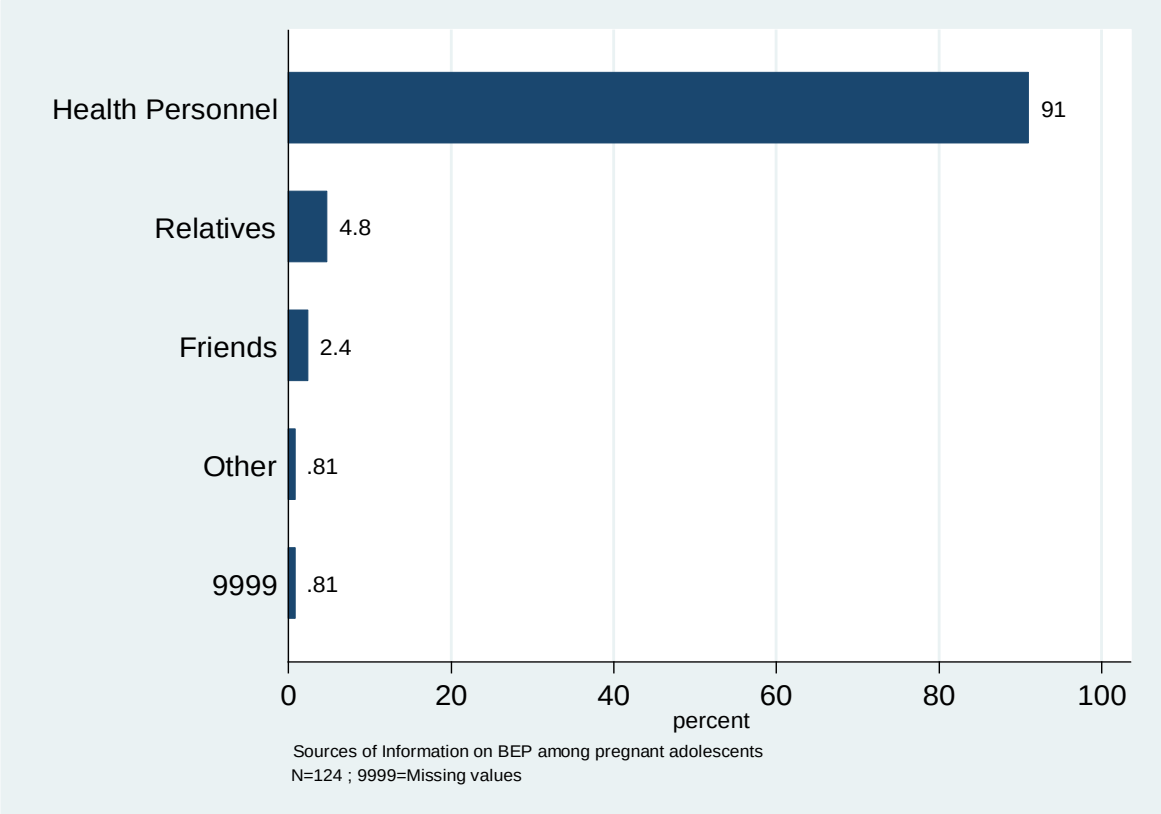

Figure 3: Sources of BEP Information among Pregnant adolescent

Figure 3 shows that majority (91%) of the respondents indicated that their main source of BEP information was the health personnel. The table also shows that 4.8% of the respondents sourced BEP information from relatives and only 2.4% had sources of BEP information from friends.

Table 4 shows that majority (62.10%) of the respondents mentioned save money and arrange for transport. Most (61.29%) of the respondents identified two (2) of the five key components of BEP and were considered as not knowledgeable of the key components of BEP, only 1 respondent mentioned three (3) components and was considered to be knowledgeable of BEP components. Unfortunately none of the respondents identified 5 components.

Table 4: Respondents' Knowledge on the key components of BEP

Variable	Frequency	Percent
Save money	77	62.10
Arrange transport	77	62.10
Identify place of delivery	1	0.081
Identify blood donor	0	0
Identify skilled attendant	0	0
Number of BEP components mentioned		
0	22	17.74
1	25	20.16
2	76	61.29
3	1	0.81
4	0	0
5	0	0
Total	**124**	**100**
Knowledge Grade of key components of BEP		
Knowledgeable (Score of 3 -5)	1	0.81
Not Knowledgeable (Score of 0 -2)	123	99.19
Total	**124**	**100**

Table 5 shows that majority of the respondents (84%) identified two (2) of the six emergencies concerning birth and pregnancy, about 9% of the respondents did not mention any of the emergencies and both groups were considered as not knowledgeable of emergencies concerning birth and pregnancy. However only 7% of the respondents identified at least three of the six emergencies and were considered as knowledgeable.

Table 5: Respondents Knowledge of six emergencies concerning birth and pregnancy

Variable	Frequency	Percent
Vaginal bleeding	42	33.87
Swollen hands, face or both	32	29.03
Blurred vision	26	20.96
Abdominal pain	7	5.64
Fever	2	1.61
Severe headache	0	0
Identified No. of Emergencies		
None	11	9
One and Two	104	84

Three or more	9	7
Total	**124**	**100**
Overall Knowledge Grade of six emergencies		
Knowledgeable (Score of 3 -6)	9	7
Not Knowledgeable (Score of 0 -2)	115	93
Total	**124**	**100**

Table 6 shows that majority (84.68%) of the respondents saved money and about 65.32% had arranged for transport and only a few (20.97%) had identified place of delivery. Furthermore the table shows that none of the respondents had identified blood donor nor skilled attendant. However, only 4.03% of the respondents were considered as prepared for BEP while majority (95.97%) were considered as not prepared for BEP

Table 6: Respondents' Birth and Emergency Preparedness (n=124)

Level of BEP	**Frequency**	**Percent**
Save money		
Yes	105	84.68
No	19	15.32
Total	**124**	**100**
Arrange transport	**Yes**	
Yes	81	65.32
No	43	34.68
Total	**124**	**100**
Identified place of delivery		
Yes	26	20.97
No	98	79.03
Total	**124**	**100**
Identified blood donor		
Yes	0	0

No	124	100
Total	**124**	**100**
Identified skilled attendant		
Yes	0	0
No	124	100
Total	**124**	**100**
Number of steps taken		
Prepared (Score of 3 -5)	5	4.03
Not Prepared (Score of 0 -2)	119	95.97
Total	**124**	**100**

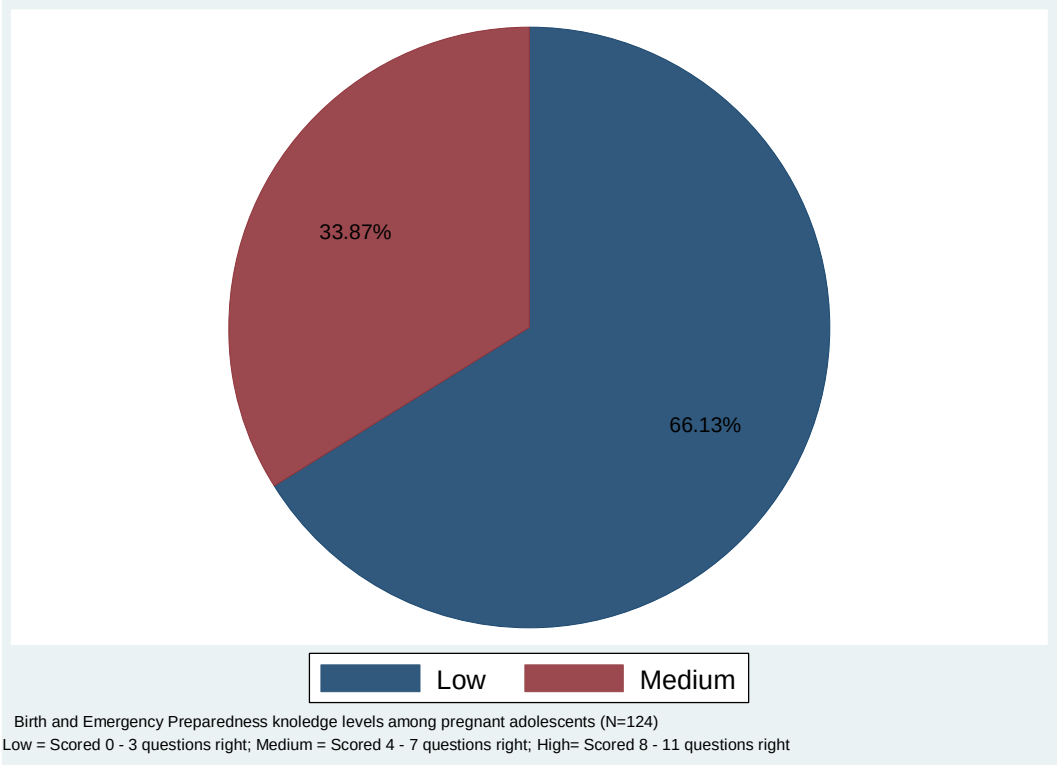

Figure 4: Overall Knowledge levels on Birth and Emergency Preparedness among Pregnant Adolescents

Figure 4 shows that majority (66.13%) of the respondents had low knowledge levels of BEP, while 33.87% of the respondents had medium knowledge level and none among respondents had high knowledge level of BEP.

4.3.3: Section C: Perception of Birth and Emergency Preparedness

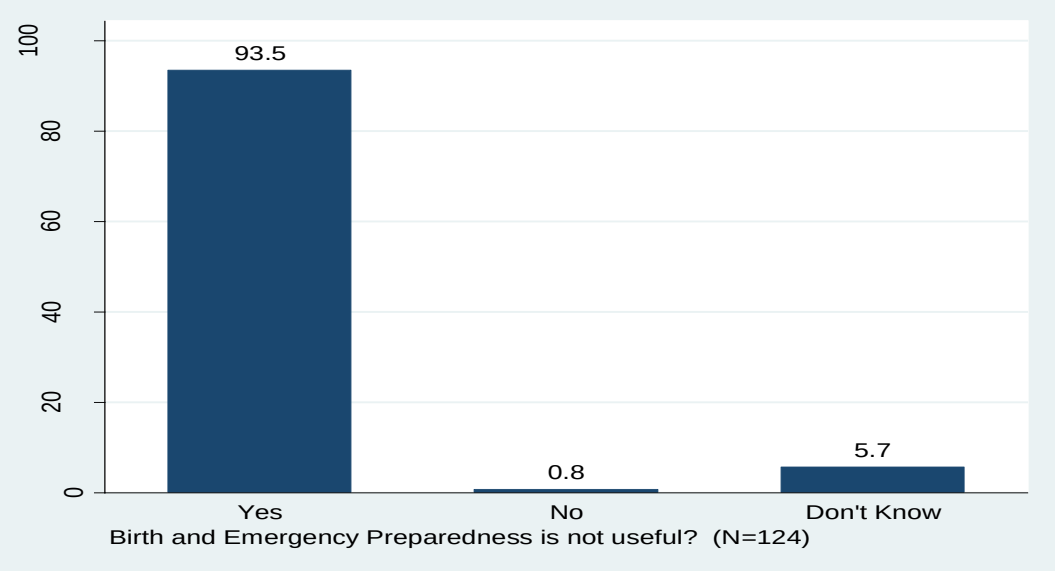

Figure 5: BEP not useful

Figure 5 shows that majority (93.5%) of the respondents indicated that BEP is useful and only 5.7% didn't know whether it was useful or not.

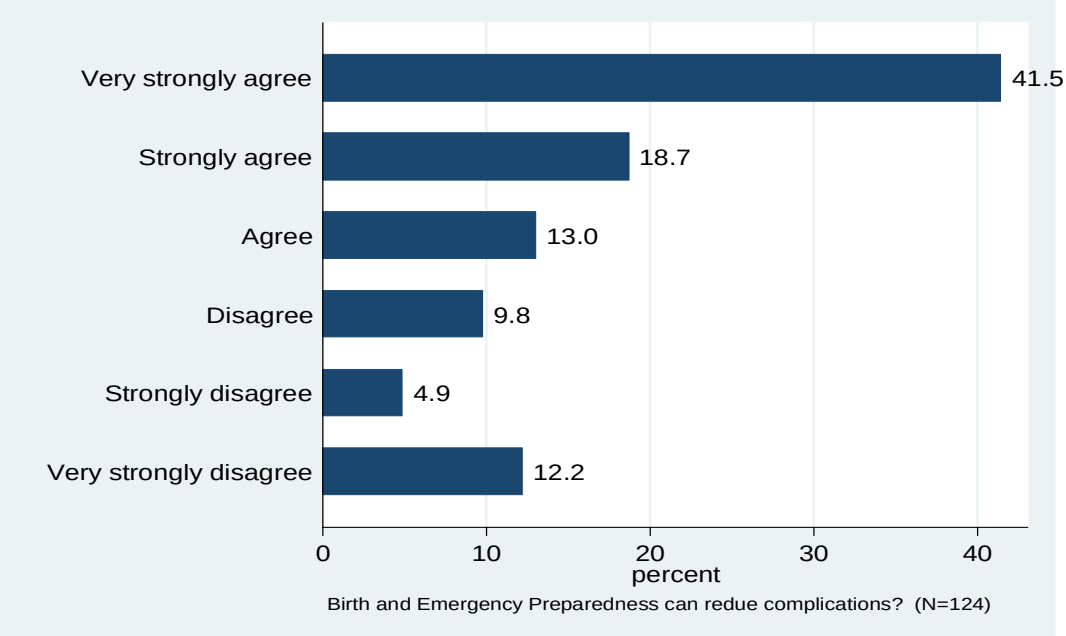

Figure 6: BEP cannot reduce pregnancy complications

Figure 6 shows that 41.5% respondents strongly agreed that BEP can reduce pregnancy complications only 4.9% strongly disagree.

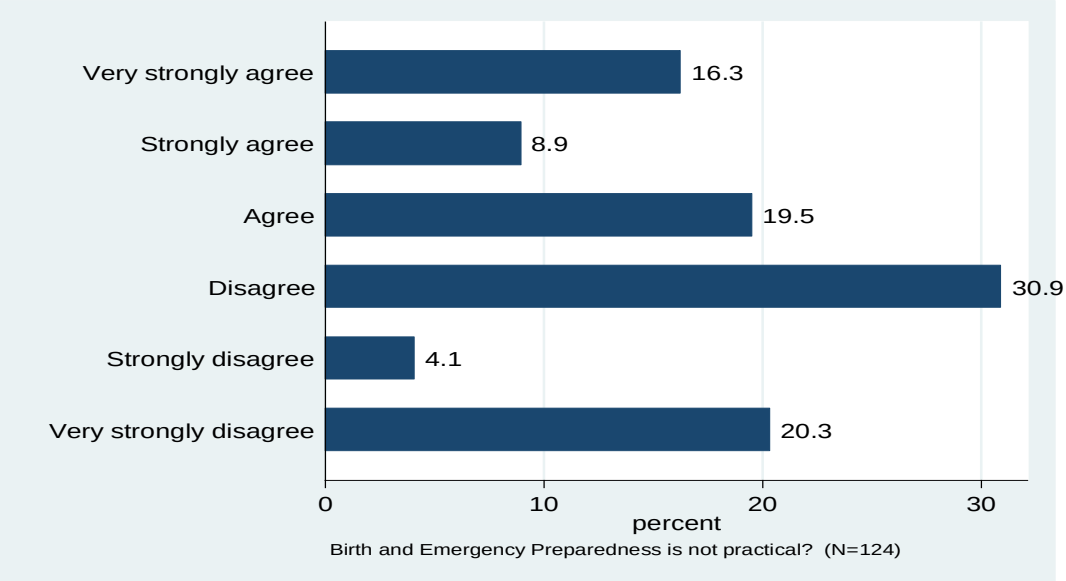

Figure7: BEP is not practical

Figure 7 shows that most of the respondents 30.9% disagreed that BEP is not practical and only 8.9% strongly agreed.

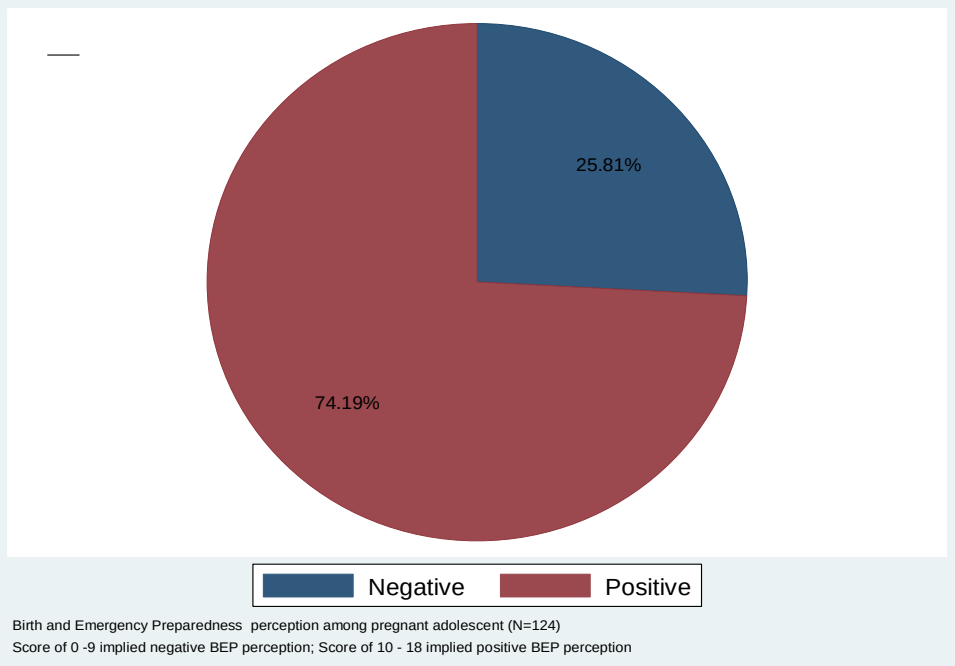

Figure 8: Overall adolescents' Perception of BEP

Figure 8 shows that majority (74.1%) of the respondents had a positive perception regarding BEP whereas 25.8% had a negative perception of BEP.

4.3.4: Section D: Association between variables

Table 7 shows that there was no statistically significant association between knowledge of BEP and respondents' social demographic characteristics (P-value =0.826, 0.745, 0.671, 0.629, 0.765 and 0.204 respectively).

Table 7: Association of knowledge of BEP with social demographics of respondents

Variable	Adjusted Odds Ratios (95%CI)	P-value
Age		
15 – 19	1.048 (0.690 - 1.592)	0.826
Marital status		
Single	Ref	
Married	0.886 (0.426 -1.840)	0.745
Education		
No education	Ref	
Primary	0.640 (0.082 - 5.011)	0.671

Secondary	0.609 (0.811 - 4.568)	0.629
Tertiary	0.667 (0.047 - 9.472)	0.765
Occupation		
Employed	ref	
Unemployed	4.029 (0.470 - 34.551)	0.204

Table 8 shows that there was a statistically significant association between knowledge of BEP and respondents' parity (P-value =0.014). The table also shows that there was a strong statistically significant association between knowledge of BEP and respondents' number of ANC visits (P-value =0.001).

Table 8: Association of BEP with Respondents obstetric history

Variable	**Adjusted Odds Ratios (95%CI)**	**P-value**
Gravid		
1	ref	
2	0.873 (0.423 - 1.780)	0.712

Parity		
1	ref	
2	1.725 (0.782 - 3.805)	0.177
3	0.075 (0.009 -0.597)	**0.014**
No of ANC visits		
One	ref	
Three and above	14.5 (2.890 - 72.762)	**0.001**

Table 9 shows that there was a statistically significant association between BEP and the respondents' hearing about BEP, source of BEP information, key components of BEP and making BEP arrangements (P-value = 0.025, 0.042, 0.025 and 0.019 respectively).

Table 9: Association of BEP with Respondents knowledge of BEP

Variable	Unadjusted Odds Ratios (95%CI)	P-value
Recommended number of visits		
1	1.142 (0.060 - 21.870)	0.929
2	0.571 (0.042 - 7.740)	0.674
3	0.380 (0.101 - 1.436)	0.154
4	0.831 (0.273 - 2.527)	0.744
Heard of BEP		
Yes	ref	
No	0.374 (0.158 - 0.884)	**0.025**
Source of information		
Health personnel	ref	
Relatives	0.581 (0.101 -3.355	0.544
Other	0.402 (0.167 -0.966)	**0.042**
Knowledge on BEP components		

Not Knowledgeable	ref	
Knowledgeable	32.824 (10.210 - 105.518)	<0.0001
Importance of BEP		
Yes	ref	
No	6.317 (1.254 - 31.830)	**0.025**
Reason		
Yes	ref	
Other	0.907 (0.439 - 1.876)	0.792
Made arrangements		
Yes	ref	
No	0.328 (0.129 - 0.833)	**0.019**

Table 10 shows that when the variables were ran in multivariate analysis, knowledge of BEP components, parity and making arrangements of BEP components were strongly associated with BEP. Compared to those who were not knowledgeable of BEP components, those who were knowledgeable were 37 times more likely to be prepared for BEP (AOR 37.391 95%CI 7.968 - 175.463). The table shows that respondents' parity had greater odds of knowing the components of the BEP (P-value = 0.006). Parity affected BEP and those who had more than 1 child were less likely to be prepared compared to those who had none (AOR 0.026 95%CI 0.002 -0.351). The table also shows that those who did not make arrangements were less likely to be prepared although it was not statistically significant.

Table 10: Multiple variable logistic regression of factors associated with BEP among adolescents of Ndola district

Variable	**adjusted Odds Ratio (95%CI)**	**P-value**
Knowledge BEP components		
Not knowledgeable	1	
Knowledge	37.391 (7.968 -175.463)	**<0.0001**
Parity		
None	1	
One and more	0.026 (0.002 -0.351)	**0.006**

Making arrangements		
Yes	1	
No	0.240 (0.0 -1.192)	**0.081**

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1: Introduction

Risk of maternal mortality among adolescents is high. A large proportion of maternal and neonatal deaths occur among pregnant adolescents. However, there is lack of published information concerning knowledge and perception of BEP among pregnant adolescents in Ndola district, Zambia. This study aimed at assessing the levels of knowledge and perception of BEP among pregnant adolescents in Ndola District, Zambia. The study comprised of 124 pregnant adolescents sourced from four (4) urban clinics and data was collected using a semi-structured interview schedule. This chapter discusses the findings of the study.

5.2: Social Demographic characteristics and Obstetric Variables

Most respondents in this study were aged between 17 and 19 years (Table 2). The results are similar to the findings by a study conducted by Kumadi, (2015) on Birth Preparedness among Expectant Teenagers which reported that most of the respondents were aged between 18 and 19 years. This similarity could be due to the fact that both studies were conducted in Africa where adolescents' fertility rate is at peak between the age of 18 -19 years.

The current study revealed that the majority of the respondents were married. This is supported by the fact that most women in Zambia marry by the age of 20 years and about 60% of women aged 15-49 are currently married as reported by ZDHS (2015). This finding indicates that like other African societies and culture, respondents in this study value the institution of marriage and they could have had some form of social and moral support from their significant others. On the other hand, with the increase in poverty and unemployment levels in the country, some girls would have lacked sponsorship for education and therefore end up in marriage at an early age.

This study also showed that majority of the respondents attained secondary school level of education and very few had never been to school (Table 2). This finding is similar to the study conducted by Yunusa et al. (2017) on Knowledge, Perception and Practice of Birth Preparedness and Complication Readiness among Pregnant Women Attending a Tertiary Healthcare Facility in Sokoto in Nigeria who reported that majority (93.2%) of the participants had at least secondary education. This similarity could be related to the fact that both studies were conducted in an

urban setting where most residents can easily access education than in rural settings where most schools are not easily accessible due to long distance. The current finding is supported by the ZDHS (2015) report which stated that women in urban areas are more likely to have a secondary education or higher than their rural counterparts. This implies that at least almost all the respondents were able to read and write. This is important because educational attainment is one of the most influential factors affecting people's knowledge, attitudes and behaviour in various aspects of life and has been shown to be an important determinant of health (ZDHS, 2015). Literacy also enhances the ability of adolescent mothers to know their expectations from the health care and so would be able to state their birth and emergency preparedness.

Regarding employment status, the study showed that majority of the respondents were unemployed. This study finding is supported by UNICEF (2015) report which stated that among economically active Zambians, urban adolescents have the highest unemployment rates, with those aged 15-19 peaking at 79%.

In this study it was evident that majority of the respondents were pregnant for the first time. This is contrary to a study conducted in Nigeria by Yunusu et al. (2017) who reported that 24.3% of the respondents were pregnant for the first time and this could be due to the difference in age range of participants and the current study comprised of adolescents only. Being pregnant for the first time could pose significant risk on the novices preparing for birth and birth experiences but literature indicated because of perceived risk associated with first pregnancy, a woman is more likely to seek maternal health care services for first order than high order births (Kabakyenga et al., 2012).

This study also showed that only a few had attended ANC visits three or more times (Table 3). A study in Ethiopia by Muhammedawel (2014) on Birth preparedness and complication readiness reported similar findings that majority (89.6%) of the respondents were pregnant for the first time at the age less than 20 years and only (28%) of the respondents had 4 or more visits. The similarities of the findings could be due to the fact that both studies were conducted in adolescents who have been reported to most likely either not attend ANC or to attend late and infrequently due to lack of knowledge, lack of power to take decisions, lack of money, or cultural factors including local concepts of illness. The current study found that majority of the

respondents initiated ANC attendance late between 4 to 6 months. A study conducted in Tanzania by Gross et al. (2012) on Timing of antenatal care for adolescent and adult pregnant women reported that 71% of the pregnant women initiated ANC attendance after the recommended four months of pregnancy. Adolescent pregnant women have been reported to attend ANC late and infrequently due to lack of knowledge.

5.3: Knowledge of birth and emergency preparedness of Respondents

The current study found that more than half of the respondents had low levels of knowledge on BEP while less than half of the respondents had medium knowledge and none among the respondents had high levels of knowledge on BEP (Figure 4). This is similar to the study conducted in Ghana by Affipunguh et al. (2016) on assessment of knowledge and practice towards birth preparedness and complication readiness among women who reported poor knowledge among participants in the study areas. The reason for this could have been the fact that majority of the respondents were coming for ANC visit for the first time hence they may not have heard of BEP components as BEP is normally taught during antenatal clinics to mothers who attend and are given information regarding the same.

This study also found that majority of the respondents had heard about BEP and most of them indicated that their main source of BEP information was the health personnel (Figure 3). Similarly Gebre et al. (2015) in a study conducted in Ethiopia on Birth Preparedness and Complication Readiness among Pregnant Women in Duguna Fango District, reported that majority (73%) of the respondents indicated that a health care provider had given advice on BEP during their ANC visits. Information is cardinal and is a key component of health promotion as it can empower adolescent mothers with knowledge on BEP to reduce on maternal mortality. It is evident that in this study BEP messages were accessible to most pregnant adolescents. This means that if the pregnant adolescent mother does not attend ANC visits she will not receive BEP messages hence it explains why the levels of knowledge on BEP were low.

The study also found that majority of the respondents were not knowledgeable of the six emergencies concerning birth and pregnancy (Table 4) however, only a few respondents were knowledgeable. A similar study was conducted in Ethiopia by Berhe et al. (2018) on Birth

preparedness and complication readiness among pregnant women showed that only 26.33% of pregnant women were aware of emergencies concerning birth and pregnancy.

Contrary to findings of this study that reported low levels of knowledge on emergencies concerning birth and pregnancy other studies have reported high levels of knowledge on emergencies concerning birth and pregnancy. Sabageh et al. (2017) in a study to determine Birth Preparedness and Complication Readiness (BPACR), in Nigeria reported good knowledge of BPACR on emergencies concerning birth and pregnancy among pregnant women.

The low levels of knowledge in this study suggests inadequate awareness on BEP probably because of high number of pregnant adolescents who were attending ANC visit for the first time. This implies that adolescent women having knowledge on BEP will have a fear that these emergencies could happen to them and get prepared for birth and its complications. However, this cannot be concluded that adolescents are not knowledgeable because majority were attending ANC for the first time.

5.4: Birth and emergency preparedness of Respondents

This study found that majority of the respondents were not prepared for BEP, only 1 respondent was considered as prepared (Table 4). This finding is consistent with findings in Ghana by Kumadi (2015) in a study birth preparedness among expectant teenagers in Ledzorkuku Krowor municipal assembly (Lekma), who reported that birth preparedness among teenage expectant mothers were poor as more than half of them (50.8%) were not prepared. On a contrary, a study conducted in Ethiopia by Gebre et al. (2015) on Birth Preparedness and Complication Readiness among Pregnant Women in Duguna Fango District, Wolayta Zone reported that 18.3% of pregnant women were considered as well prepared for birth and complications.

This study showed that out of the five key BEP components, save money and arrange for transport were the most common key components reported to have been arranged by majority of the respondents. None of the respondents reported to have identified blood donor nor skilled attendant for emergency situation. Similarly another study was conducted in Ethiopia at College of Medicine and Health Sciences, Adigrat University by Berhe (2018) on Birth preparedness and complication readiness among pregnant women reported that preparation of blood donor for

emergency situation was among the poorly utilized element of birth preparedness and complication readiness plan. On the contrary to the current study, a study conducted in Nigeria by Sabageh et al. (2017) on Birth Preparedness and Complication Readiness found that almost 89% of the respondents had made transportation arrangements and saved money towards delivery and a few had made arrangements for blood donor. Antenatal care education should place emphasis on BEP to improve access to skilled and emergency obstetric care.

5.5: Perception of Birth and Emergency Preparedness

In this study most of the respondents had a positive perception regarding BEP in fact majority indicated that BEP is useful (Figure 5) only a few had a negative perception on BEP (Figure 8). This is similar to findings conducted in Nigeria by Yunusa et al. (2016) on Knowledge, Perception and Practice of Birth Preparedness and Complication Readiness among Pregnant Women Attending a Tertiary Healthcare Facility in Sokoto, who reported that most of the respondents perceived the need for a pregnant woman and her family to observe the various BPCR practices.

5.6: Association of BEP with Social Demographic characteristics and Obstetric Variables

The current study did not show any statistical significance association between BEP and demographic characteristics that is age, marital status, level of education, religion and employment status. The study established a significant association between knowledge of BEP and parity. Those who had one or more children were less likely to be birth prepared than those with no child and this could be attributed to the reason that they felt that they are experienced. In contrast to the regular view which present the view that the greater the parity of a woman, the higher the level of knowledge a woman is likely to have, this study did not establish any relationship between the two variables. Thus, women who have delivered before should be encouraged to attend ANC and warned not to take anything for granted because they had previously given birth. On the contrary this study showed that women who had given birth before were at greater odds of knowing the components of the BEP.

Similarly, this study found no statistical significance association between knowledge of BEP with gravid just like a study conducted in Nigeria by Ukaegbu et al. (2014) on an Assessment of Birth Preparedness and Complication Readiness in Antenatal Women in Umuahia North Local

Government area reported that there was no statistically significant difference in knowledge of danger signs during pregnancy between the prim-gravid and those who had experienced more than one pregnancy.

The current study also showed that the number of ANC visits had a strong statistical significance association with BEP. Compared to those who had one ANC visit those who had three or more ANC visits had 14 times the odds of BEP. In a study by Nkwocha et al. (2017) conducted to assess Birth Preparedness and Complication Readiness Knowledge and Practice among Pregnant Women in a Cottage Hospital Nigeria found an association between pregnant women who regularly attended ANC visits to be are more likely to plan to prepare for birth and complication by 4 times as compared to non ANC attendees. Attendance to antenatal care is important in monitoring the wellbeing of both the mother and the unborn child. It also provides an opportunity to inform and help the pregnant women plan for a safe birth and prepare for complication should it arises. As indicated in Table 8 the study also revealed a statistical significant association between BEP and respondents' hearing about BEP.

The current study shows a statistical significance association between BEP and respondents' source of BEP information. The results showed that majority of the women were aware of birth and emergency preparedness. Although few of the women got their information from different sources, most of the women were informed by the health personnel. There was a strong statistically significant association between BEP and respondents' knowledge of the key components of BEP. However, the study shows a statistical significance association between BEP and respondents' making BEP arrangements.

When the variables were ran in multivariate analysis, knowledge of BEP components, parity and making arrangements of BEP components were strongly associated with Birth and Emergency Preparedness. Compared to those who were not knowledgeable of BEP components, those who were knowledgeable were 37 times more likely to be prepared for BEP (AOR 37.391 95%CI 7.968 -175.463). This study shows that respondents' parity had greater odds of knowing the components of the BEP (P-value = 0.006). The study also shows that those who did not make arrangements were less likely to be prepared although it was not statistically significant.

5.7: Application of the Conceptual Framework

The conceptual framework that was adopted from the Moattar, (2014) supported this study. It proposed that pregnant adolescents are ready to act if they have knowledge and positive perception of BEP. In this study it was found that pregnant adolescent mothers were not knowledgeable of BEP and were not prepared for BEP but they had a positive perception about BEP. The study found that hearing about BEP and education on the key components affect the levels of pregnant adolescent mothers' knowledge. The study also established that some obstetric variables namely; parity and number of ANC visits affect the levels of pregnant mothers' knowledge and preparedness of BEP. Therefore, all the components of the framework were applicable and very helpful as they formed the basis of determining the levels of knowledge and perception of BEP among pregnant adolescent mothers in Ndola district.

5.8: Strengths of this Study

The study achieved the main objective of determining the levels knowledge and perception BEP among pregnant adolescents in Ndola District.

The study also established that there is statistically significant association between levels of pregnant adolescent's level of knowledge and some obstetric variables namely; parity and Number of ANC visits. It has added to the body of knowledge which will inform policy towards development of strategies that will improve information provided on BEP during ANC visits and promote the reproductive health of pregnant adolescent mothers and their babies.

5.9: Limitations of the Study

The limitation of this study were that the study was only conducted in Ndola District on the Copper-belt Province and therefore, results cannot be generalized to other districts in Zambia.

The collection of data involved face to face interviews with pregnant adolescent mothers which could have affected their openness when answering questions despite the reassurance that was given to them before beginning the interview. Their responses therefore, may not have presented the true picture of their levels of knowledge and perception of BEP. There could have been recall bias for the participants who delivered before but this was minimized by probing.

5.10: Implications to Nursing

5.10.1: Implications to Nursing Education

The study revealed that pregnant adolescents had low levels of knowledge and yet their perception of BEP was good. Empowering pregnant adolescents with knowledge is a critical tool in achieving better health outcome for them. Nursing education should, therefore, emphasize the importance of nurse -client interaction so that nurses and midwives develop the skill and attitude of providing adequate and quality information to the antenatal mothers. This is because nursing education plays a pivotal role in grooming and shaping student nurses' into professionals capable of providing quality health education to pregnant women. This will avoid providing inadequate information about BEP to all pregnant mothers.

5.10.2: Implications to Nursing Administration

The study findings showed that 66.13% of the respondents had low levels of knowledge while 33.87% of the respondents had medium knowledge and none among respondents had high levels of knowledge on BEP. Nurse administrators are required to monitor the practices of midwives during ANC visits as they provide IEC massages to pregnant mothers. The nurse administrators need to regularly make support visits to the centres to monitor the performance of midwives so as to offer on the spot guidance. The nurse administrators must also ensure that the MCH department has adequate numbers of midwives. This is because inadequate staffing levels results in compromised standards of care which leaves not knowledgeable of BEP. Under staffing also leads to burnouts among midwives and therefore would compromise the IEC messages provided to the pregnant mothers.

5.10.3: Implications to Nursing Practice

This study revealed low levels of knowledge on BEP among pregnant adolescents with most of them 86 (69.35%) indicating that they had heard about BEP and majority 78 (91%) siting the health personnel to be their main source of BEP information. The study also revealed significant association between BEP and some obstetric variables namely; parity and number of ANC visits. There is a shift in the topics taught and mostly clients are taught about some BEP components and emergencies concerning birth and pregnancy, while other components are almost neglected.

This could also mean that midwives did not provide quality IEC on BEP package to pregnant adolescent mothers thereby leaving them not knowledgeable of BEP.

Midwives should provide quality IEC messages about BEP to all pregnant mothers regardless of their demographic and obstetric status in order to raise knowledge levels among pregnant adolescent mothers.

5.10.4: Implications to Nursing Research

This study revealed that there were low levels of knowledge on BEP among pregnant adolescent mothers. However during literature search, there was generally scarcity of publications on knowledge and perception of BEP among pregnant adolescents in Zambia. Therefore, more research needs to be done in this area so as to come up with a body of knowledge in nursing to guide policy and the provision of adequate and quality health education on BEP to pregnant adolescents.

5.11: Conclusion

Birth and emergency preparedness among pregnant adolescents is very essential for improvement of reproductive health among adolescents hence reduce on maternal mortality. In this study several important findings were observed. The number of ANC visits, education on the key components and parity were the significant predictors for knowledge and perception of BEP among adolescents. The three variables were subjected to statistical tests to measure associations among them.

This study revealed that levels of knowledge of BEP among pregnant adolescents were very low as every pregnant woman should be expected to be knowledgeable about BEP. It was also found that pregnant adolescents were not prepared concerning BEP. Specifically, from the key elements of BEP very low percentage of pregnant adolescents identified place of delivery and no one identified potential blood donor nor skilled attendant for the emergency situation during pregnancy and childbirth. There is need for corrective measures to address the low levels of knowledge on BEP among pregnant adolescents. The quality of IEC messages provided by midwives must be improved. Therefore, the Zambian Ministry of Health, Ndola District Health Management Team (DHMT), Health facilities and other stakeholders should work to improve women's Birth and Emergency Preparedness plan.

Furthermore Ndola DHMT should encourage pregnant adolescents to attend ANC as they will receive BEP messages during the visits. The district should put effort to empower pregnant adolescents with education on BEP, since source of information was found to be associated with BEP.

5.12: Recommendations

5.12.1: Recommendations to the Midwives

The study revealed that the overall knowledge on BEP was low among pregnant adolescents and that respondents were not well prepared for BEP in Ndola district. Midwives need to improve the quality of IEC messages provided to all pregnant mothers during ANC visits regardless of the circumstances like gravid, number of ANC visits and parity. There is a need to strengthen IEC on all the topics by Midwifery practitioners, at every opportunity to empower pregnant adolescent women with more knowledge on BEP so that they can make informed decisions. The midwives should also provide individualized teaching about BEP package to all pregnant adolescent mothers so that the levels of knowledge on BEP are improved among all pregnant adolescent mothers.

5.12.2: Recommendations to Ndola District Health Management

The study findings indicate that majority of the respondents 76 (61%) indicated that the health personnel discussed BEP during ANC visits. The Ndola DHMT must therefore strengthen supportive supervision so as to assist midwives to adhere to the guidelines during dissemination of BEP messages and to master the necessary skills in providing BEP services to the pregnant adolescents.

Ndola DHMT must also organize regular clinical care meetings and presentations which will enable midwives refresh their knowledge and skill of delivering IEC on BEP package to improve adolescents' level of knowledge on BEP and preparedness.

Considering the fact that midwives may be overwhelmed with a lot of pregnant mothers coming for ANC visits owing to the increased nurse client ratios, the nurse managers need to lobby for more midwives to be allocated to the mother and child health (MCH) department to reduce on work load which will enable them provide quality IEC messages on BEP package to all pregnant mothers.

5.12.3: Recommendations to the Ministry of Health

Having established the relationship between numbers of ANC visits with the level of knowledge among pregnant adolescents and following the world health organisation recommendation for member countries to increase the antenatal visits to eight during the pregnancy, the Government of Zambia through the Ministry of Health should consider addressing challenges that deter women from attending antenatal care clinics. Furthermore, government should also consider increasing the number of trained safe motherhood action groups so information on BEP should be provided within the community and during ANC visits. As a measure to improve the levels of knowledge and preparedness of BEP among pregnant adolescents in Ndola District, the Ministry of Health should expand the establishment so that more midwives can be employed who will, in turn, deliver quality BEP messages to pregnant adolescents.

The Ministry of Health should also expand the establishment for the Schools of Midwifery so that more educators are available to build capacity in student midwives who will be responsible for the delivery of quality BEP messages in health facilities to improve adolescents' knowledge of BEP.

5.12.4: Recommendations to Nursing Educators and the GNC

The study revealed that majority of the pregnant adolescents had low levels of knowledge on BEP despite of majority 78 (91%) siting the health personnel to be their main source of BEP information. The nurse educators must, therefore, teach and emphasize the skill of giving Information, Education and Communication as it is an important health promotion tool. This will enable nurses and midwives give mothers detailed information on BEP to avoid giving inadequate information about BEP components and emergencies concerning birth during ANC visits. The midwifery curriculum should also be strengthened particularly on BEP package in order for the midwives to acquire adequate knowledge which will enable them render quality BEP information upon qualifying to the standard of Ministry of Health (MoH) and World Health Organization (WHO) at large.

More hours should be allocated for clinical experience on MCH department especially antenatal for student midwives to gain knowledge and skill to provide quality information about BEP to pregnant adolescents coming for ANC visits.

5.12.5: Recommendations for Further Research

This study was limited to the scope of determining the levels of knowledge and perception of BEP among pregnant adolescents. Future research should therefore be directed at assessing midwives' provision of BEP messages which will be beneficial in evaluating the quality of the BEP messages provided. It is, therefore, recommended that studies on BEP among adolescents should be extended to the other health centres of the maternal and child health care in the district so that necessary changes and guidelines towards improvement of levels of knowledge and perception of BEP among pregnant adolescents are formulated. There is also need to carry out this same study at a large scale so as to allow for generalization of the study findings.

5.13: Dissemination of Findings

The results of the study were presented during the postgraduate seminar week on 29th October 2018 organised by the Directorate of Research and Graduate Studies. The results will also be presented to management at Ndola DHMT which was the study site. In addition, the results will be published in a recognized peer reviewed Journal such as the Zambian Medical Journal, Journal of Agriculture and Biomedical Sciences or the Journal of Nursing, Midwifery and Health sciences. In addition, bound copies of the study will be submitted to the Department of Nursing Sciences, UNZA -Medical Library, Main Library UNZABREC and NHRA. The researcher will also present this report during clinical meetings at Ndola DHMT to inform the midwives and other health care providers in all the health centres in Ndola district.

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APPENDICES

A. Participant Information Sheet

TITLE OF STUDY: BIRTH AND EMRGENCY PREPAREDNESS AMONG PREGNANT ADOLESCENTS IN NDOLA DISTRICT, ZAMBIA.

Introduction

My name is Juness Kachimba; a student of Masters of Science in Midwifery and Women's Health at the University of Zambia who is kindly requesting for your participation in the research study mentioned, because it is important to explore the knowledge levels and perception towards Birth and Emergency Preparedness among pregnant adolescents.

Purpose of the Study

The study will assess the levels of knowledge and perception towards Birth and Emergency Preparedness among pregnant adolescents in Ndola District on the Copper belt Province. The information obtained will help the policy makers and implementers of the programme in the MOH to re-direct programme implementers in order to improve Birth and Emergency Preparedness among pregnant adolescents in Zambia.

Participation

Participation in this study is voluntary. If you are not interested in participating in this study you are free to do so. Even after you have joined the study you are free to withdraw as you wish, and this will not affect your receiving of care at this centre.

If you are willing to participate, you will be asked to sign a consent and agreement to participate, will not result in any immediate benefits. Please ask where you do not understand.

Procedure

The study involves a face to face interview and you will be asked a set of questions using an interview schedule. After signing the consent form, you will be taken to a room where you will be interviewed within 20 minutes.

Risks and Discomforts

There is no risk involved in this research though part of your time will be utilized to answer some questions. Some questions may seem to be sensitive and personal. If you will need further discussion, it will be offered to help you understand the topic more.

Benefits

There is no direct benefit to you by participating in this study, but the information which will be obtained will help the policy makers to take measures that will ensure that Birth and Emergency Preparedness among pregnant adolescents is given priority as one of the major strategies that can improve adolescent reproductive health in Zambia. Health professional shall receive the necessary training on Birth and Emergency Preparedness through capacity building, provision of manuals and management protocols from WHO. No monetary favours will be given in exchange for information obtained.

Confidentiality

Your research records and any information you will give will be confidential to the extent permitted by law. You will be identified by a number, and personal information will not be released without your written permission except when required by law. The ministry of Health, the School of Nursing Sciences may review your records again but this will be done with confidentiality.

B. Consent forms

Informed Consent Form

The purpose of this study has been explained to me and I understand the purpose, the benefits, risks and discomforts and confidentiality of the study. I further understand that:

If I agree to take part in this study, I can withdraw at any time without having to give an explanation and that taking part in this study is purely voluntary.

I_____

(Names)

Agree to take part in this study.

Signed: _____ Date: _____

(Participant)\

Participant's signature or thumb print

Signed: _____ Date: _____

(Witness)

Signed: _____ Date: _____

(Researcher)

PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS

1. The Dean

   School of Nursing Sciences

   P. O. Box 50110, Ridgeway Campus, University of Zambia

2. The chairperson

   UNZA BREC

   P. O. Box 50110, Ridgeway Campus, University of Zambia

C: Informed Assent Form

The purpose of this study has been explained to the child and I understand the purpose, the benefits, risks and discomforts and confidentiality of the study. I further understand that:

If I agree my child to take part in this study, she can withdraw at any time without having to give an explanation and that taking part in this study is purely voluntary.

I_____

(Names)

Agree my child to take part in this study.

Signed: _____ Date: _____

(Guardian/Parent)

Parent's signature or thumb print

Signed: _____ Date: _____

(Witness)

Signed: _____ Date: _____

(Researcher)

PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS

1. The Dean
   School of Nursing Sciences
   P. O. Box 50110, Ridgeway Campus, University of Zambia
2. The chairperson

UNZA BREC

P. O. Box 50110, Ridgeway Campus, University of Zambia

D. Data collection tool

SEMI-STRUCTURED INTERVIEW SCHEDULE

The University of Zambia

School of Nursing Sciences

KNOWLEDGE AND PERCEPTION OF BIRTH AND EMERGENCY PREPAREDNESS AMONG PREGNANT ADOLESCENTS IN NDOLA DISTRICT, ZAMBIA

Form Number: _____

Date of Interview: _____

Place of Interview: _____

Name of Interviewer: _____

Instructions to the Interviewer

1. Introduce yourself to the participant
2. Explain the contents of the participant information sheet to the participant
3. Get written consent from the participant
4. Reassure the participant that all responses will be held in strict confidence
5. Individual names and addresses should not appear on the interview schedule form
6. Ensure that all questions are answered and indicate response by ticking or writing the response in the appropriate space provided
7. Thank the participant at the end of each interview.

	SECTION A: SOCIO-DEMOGRAPHIC DATA		
1.	How old are you? (last birthday)	(Years)	____
2.	What is your marital Status?	Single Married (Separated, Widowed or Divorced)	1 2 3
3.	What is your highest level of education?	None Primary Secondary Tertiary	1 2 3 4
4.	What is your religion?	Christian Muslim Protestant Other (specify)……	1 2 3 4
5.	What is your employment status?	Employed Unemployed	1 2
6.	How many pregnancies have you ever had in your life? (Including current pregnancy).	One Two and more	1 2

7.	How many children do you have?	None 1 to 4 children 5 and more children	1 2 3
8.	At what gestational age in the current pregnancy did you start ANC visit?	0 – 3 months 4 – 6 months 7 – 9 months	1 2 3
9.	How many times have you attended ANC visit?	One Two and above	1 2
	SECTION B: KNOWLEDGE OF BIRTH AND EMERGENCY PREPAREDNESS BY ADOLESCENTS		
10	What are the recommended number of ANC visits that a pregnant woman should make during her pregnancy?	One Visit Two Visits Three Visits Four Visits	1 2 3 4
11	Have you ever heard of Birth and emergency preparedness?	Yes No (skip to question 16)	1 2

12	If yes, what is the meaning of Birth and Emergency Preparedness?	is when a pregnant woman is able to identify three and more components of birth and emergency preparedness Other (Specify)……. Don't know	1 2 3
13	Where did you hear about birth and emergency preparedness?	Health Personnel Relatives Friends Media Other (specify)……	1 2 3 4 5
14	What are the key components of birth and emergency preparedness that you know?	Save money Arrange transport Identify place of delivery Identified blood donor Identified skilled attendant	1 2 3 4 5
15	Did the health care health personnel discuss with you birth and emergency preparedness?	Yes No	1 2

16	Name the emergencies concerning birth and pregnancy that you know.	Vaginal bleeding Swollen hands, face or both Blurred vision Abdominal pain Fever Severe headache	1 2 3 4 5 6
17	In your opinion is it important for a pregnant woman to know about birth and emergency preparedness?	Yes No Don't know	1 2 3
18	Give a reason to your answer to question 17	Yes, because they will seek medical care on time No, because the danger signs will go away on their own. Other (specify)……	1 2 3
19	Have you made arrangements for any component of birth and emergency preparedness?	Yes No	1 2
20	Name birth and emergency preparedness components that you have arranged (circle all mentioned).	Save money Arrange transport	1 2

		Identify place of delivery Identified blood donor Identified skilled attendant	3 4 5

SECTION C: PERCEPTION OF BIRTH AND EMERGENCY PREPAREDNESS BY ADOLESCENTS							
	BASED ON YOUR EXPERIENCE DURING ANC VISITS AT THE CLINIC, PLEASE INDICTE WHETHER YOU; • **6 = VERY STRONGLY DISAGREE (VSD),** • **5 = STRONGLY DISAGREE (SD),** • **4 = DISAGREE (D)** • **3 = AGREE (A)** • **2 = STRONGLY AGREE (SA),** • **1 = VERY STRONGLY AGREE (VSA)**						
	PERCEPTION		**PERCEPTION SCALE**				
21	Birth and emergency preparedness are not useful.	1	2	3	4	5	6
22	Birth and emergency preparedness cannot reduce pregnancy related complications.	1	2	3	4	5	6
23	Birth and emergency preparedness are not practical.	1	2	3	4	5	6

THANK YOU FOR YOUR TIME AND FOR PARTICIPATING IN THE STUDY.

E. Measuring/Scoring Instrument for major variables

Variable	Scale	Question Number	Total Score	Maximum Score
Dependent				
Birth and Emergency Preparedness	Prepared: Score of 0 - 2 Not Prepared: Score of 3 - 5	20	5 scores	1 for each arranged component of BEP.
Independent				
Knowledge	Low: Scores of 0-3	14	5 scores	1 for each correct identified BEP component.
	Medium: Scores of 4-7 High: Scores of 8-11	16	6 scores	1 for each correct identified emergency for birth and pregnancy.
		Total	11 scores	11
Perception	Positive: Scores of 10-18	21	6	1 for each response
		22	6	1 for each response
	Negative: Scores of 0-9 Likert scale 1 – 6 point was used.	22	6	1 for each response