

**ASSESSMENT OF AWARENESS OF THE IMPORTANCE OF PHYSICAL EXERCISE
AND PROPER NUTRITION AMONG PREGNANT WOMEN, CASE STUDY AT
TORORO GENERAL HOSPITAL**

BY

KHANAKWA REBECCA WAMBOKA

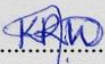
**A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF BIOLOGY IN
PARTIAL FULFILLMENT FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE WITH EDUCATION OF
BUSITEMA UNIVERSITY**

SEPTEMBER, 2024

DECLARATION

I do Hereby declare that this project report entitled assessment of awareness of the importance of physical education and proper nutrition among pregnant at Tororo referral hospital, it has never been submitted in any institution or organization for any award where someone work is used is cutedin references

KHANAKWA REBECCA WAMBOKA

SIGNATURE 

DATE..... 3RD SEPT. 2024

DEDICATION

I would like to dedicate this research report to my mentor, Ms Nabaggala Elyvania whose unwavering support and expertise have been instrumental in shaping this research project.

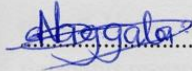
Her insightful feedback and encouragement have been invaluable.

I would like to also dedicate this research report to my family and friends who have always believed in me and provided unwavering support. Their encouragement and love have been the driving force behind my success

APPROVAL

This is to approve that this project report was written under my guidance and supervision. It is ready for submission for the consideration as a basic requirement of the partial fulfillment of the award of degree of the Bachelor of Science with Education of Busitema university

Signature

.....

Ms NABAGGALA ELYVANIA

Date.....3RD SEP . 2024 .

ACKNOWLEDGEMENT

This serves to recognize the support and guidance and assistance received during the research process.

I take this opportunity to thank the Almighty God who has enabled me complete this research project. He has kept me healthy and also provided for me with good people who have helped us finish this research project

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I extend my gratitude to my family, Mr Wamboka's family for the unwavering love and support towards my success

I also extend my sincere appreciation to Mr Eroku Silver for whatever he put in to that my research project is a success

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LIST OF ABBREVIATIONS

WHO: WORLD HEALTH ORGANIZATION

ABSTRACT

This research project aims to assess the awareness of the importance of physical exercises and proper nutrition among pregnant women at Tororo referral hospital. Physical exercises are movements and activities done to keep your body healthy or make it stronger. Proper nutrition refers to a balanced diet of safe, functionally, directed, high-quality products that allow the human body to grow, develop and stay healthy. The methodology involved use of questionnaires given randomly to pregnant women who had come for ante-natal services in Tororo referral hospital in order to collect qualitative data on the awareness of the importance of physical exercises and proper nutrition among pregnant women. The results revealed that all participants (100%) are aware of the benefits of physical exercises during pregnancy. This universal awareness indicates a high level of knowledge about the importance of physical exercises, maintaining maternal and fetal health. Regarding engagement in physical exercises, 97% of the pregnant women who reported actively participating in exercises and only 3% do not. The high rate of engagement reflected a strong commitment to applying their awareness practically, which is consistent with findings from other studies that highlight a positive correlation between awareness and actual health behavior changes. The highest percentage (75%) of pregnant women participate in walking. However, the research also revealed some of the barriers that hinder pregnant women from participating in physical exercises for example. Regarding food consumption, kaalo, a staple in Ugandan cuisine, is consumed by 89 women, indicating its central role in the diet summarized in the pie chart (Figure 4.6). Also, they accompany their meals with fruits, oranges being eaten by the largest number of participants followed by mangoes. In conclusion, the results revealed a high level of awareness regarding the benefits of physical exercises. Nutritionally, this data highlighted the preference for staple foods and fruits such as oranges, mangoes, kaalo and matooke for both cultural practices and nutritional choices. To enhance awareness, I recommend professional -led education, interactive workshops, increase accessibility and support and strengthen community-based efforts.

CHAPTER ONE: INTRODUCTION

1.1 Background

Pregnancy, a transformative period in a woman's life, demands comprehensive attention to ensure optimal health outcomes for both the mother and the developing fetus (Davis EP, 2020). The global understanding of the importance of physical exercise and proper nutrition during pregnancy has gained momentum, guided by extensive research and recommendations from reputable organizations like the World Health Organization (WHO) (Okafor, 2020). However, the application of this knowledge in Sub-Saharan Africa, and specifically in Uganda, remains a significant challenge (Delzer ME, 2021).

Globally, the benefits of physical exercise and proper nutrition during pregnancy are well-established. The WHO recommends at least 150 minutes of moderate-intensity aerobic activity per week for pregnant women, along with a focus on balanced and nutrient-rich diets (Chan CWH, 2019). These practices have been linked to reduced risks of gestational diabetes, preterm birth, and maternal complications, ultimately contributing to improved neonatal outcomes (Gascoigne EI, 2023).

While these guidelines are disseminated globally, their implementation in Sub-Saharan Africa faces unique hurdles. Limited access to healthcare facilities, prevalent socio-economic disparities, and cultural factors creates an array of challenges that demand context-specific interventions (Musoke D, 2014).

In Sub-Saharan Africa, maternal health is a complex issue exacerbated by factors such as inadequate infrastructure, limited resources, and persistent socio-cultural norms. According to a report by the United Nations, the maternal mortality ratio in Sub-Saharan Africa remains unacceptably high, with approximately 542 deaths per 100,000 live births (Musarandenga R, 2021). Uganda, like many other countries in the region, grapples with challenges in reducing these alarming statistics due to a number of interconnected issues.

A study published in the "African Journal of Reproductive Health" highlighted that only a small percentage of pregnant women in Uganda engage in regular physical exercise, and malnutrition rates remain a concern (Nabugoomu et al., 2020). This underscores the urgency of addressing the awareness gap and promoting healthier practices during pregnancy.

While global statistics provide a broad understanding of maternal health, the specific challenges faced by pregnant women in Uganda demand a closer examination. The socio-economic context, cultural norms, and healthcare infrastructure in Uganda contribute to a unique set of circumstances that necessitate tailored interventions. The disparity between global guidelines and local realities underscores the need for research that not only identifies the gaps but also formulates evidence-based strategies applicable to the Ugandan context.

In light of these considerations, this research aims to delve into the awareness levels and practices of physical exercise and proper nutrition among pregnant women in Uganda, contributing valuable insights to the global discourse on maternal health while offering actionable recommendations for the local context.

1.2 Problem Statement

Despite the well-established benefits of physical exercise and proper nutrition during pregnancy, there is a noticeable lack of awareness and implementation of these practices among pregnant women in Uganda. The absence of adequate knowledge contributes to an increased risk of complications during pregnancy and childbirth, negatively impacting maternal and child health. Understanding the factors that hinder the awareness and adoption of these practices is essential for developing targeted interventions and policies to improve maternal health outcomes in Uganda.

1.3 Objectives

1.3.1 General objective

To assess and enhance awareness regarding the importance of physical exercise and proper nutrition among pregnant women in Uganda.

1.3.2 Specific Objectives

- i. To evaluate the level of awareness among pregnant women in Uganda regarding the benefits of physical exercise during pregnancy.
- ii. To identify socio-cultural and economic factors influencing the awareness and adoption of healthy practices during pregnancy.
- iii. To propose evidence-based recommendations for improving awareness and implementing physical exercise and proper nutrition during pregnancy in Tororo.

1.4 Research questions

- i.** What is the current level of awareness among pregnant women in Uganda regarding the benefits of physical exercise during pregnancy?
- ii.** How knowledgeable and compliant are pregnant women in Uganda with regard to proper nutrition during pregnancy?
- iii.** What socio-cultural and economic factors contribute to the lack of awareness and implementation of healthy practices during pregnancy in Tororo Referral Hospital?
- iv.** What evidence-based strategies can be proposed to improve awareness and implement physical exercise and proper nutrition during pregnancy in Tororo Referral Hospital?

1.5 Justification

This research is justified by the need to address the gaps in awareness and implementation of physical exercise and proper nutrition during pregnancy in Uganda. By identifying the barriers and challenges faced by pregnant women, healthcare providers, and the community, this study aims to contribute valuable insights that can inform evidence-based interventions.

Improving awareness in this area is not only crucial for the well-being of pregnant women but also aligns with global health goals, such as those outlined by the World Health Organization (WHO), emphasizing the importance of maternal and child health.

1.6 Scope of the study

1.6.1 Content scope

The content scope of the study will be limited to comprehensively investigate and analyze the awareness levels and perceived importance of physical exercise and proper nutrition among pregnant women. The study will focus on a range of factors, including knowledge, practices, decision-making processes, and potential barriers that influence pregnant women's behaviors related to physical activity and nutrition during pregnancy.

1.6.2 Geographic scope

This study will be conducted among pregnant women from diverse demographic backgrounds and geographic locations that seek maternity services at Tororo General Hospital. Some private clinics within Tororo District will also be included in the study. The research will consider

factors such as age, educational background, socioeconomic status, and cultural diversity among pregnant women in Tororo Referral Hospital.

1.6.3 Time scope

This study will be conducted between February and April 2024.

1.7 Significance of the study

- i. This study will hold profound significance in addressing critical gaps in maternal healthcare.
- ii. By focusing on the unique socio-cultural and economic factors in Uganda, the research aims to improve maternal and neonatal health outcomes, reduce the socio-economic burden associated with complications, and provide context-specific interventions.
- iii. Beyond its local impact, the project contributes valuable insights to the global discourse on maternal health, fostering collaborative and informed approaches.
- iv. Empowering pregnant women and healthcare providers, the initiative seeks to create a positive feedback loop of improved awareness, informed decision-making, and more targeted maternal care, ultimately advancing maternal health outcomes in Uganda and influencing global health knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Pregnancy is a complex physiological process involving the development and growth of a fetus within the maternal womb. It begins with fertilization, where a zygote divides into a blastocyst, which implants into the uterus. This stage, known as organogenesis, is critical for fetal development. The fetal period, from the ninth week to birth, is characterized by rapid growth and maturation of the fetus's organs, tissues, and systems. The final stage is childbirth, which occurs around 40 weeks after the last menstrual period. The process is regulated by hormonal, mechanical, and neurological factors, resulting in the safe delivery of the infant (Cunningham et al., 2021).

Pregnancy is a critical period in a woman's life, marked by significant physiological and psychological changes (Nabugoomu et al., 2020). The health and well-being of both the mother and the unborn child are heavily influenced by various factors, including maternal nutrition and physical activity. Adequate nutrition and regular physical exercise during pregnancy are vital for maintaining maternal health, supporting fetal growth and development, and reducing the risk of complications during pregnancy and childbirth (Guinhouya et al., 2022). However, awareness and adherence to recommended guidelines regarding nutrition and physical activity among pregnant women are often lacking, especially in resource-constrained settings such as Tororo General Hospital in Eastern Uganda.

Tororo General Hospital, located in Eastern Uganda, serves as a critical healthcare facility catering to the needs of a diverse population, including pregnant women from both urban and rural areas (Tesfalul et al., 2020). However, the region faces numerous healthcare disparities, including limited resources, inadequate infrastructure, and a shortage of skilled healthcare professionals. These challenges underscore the importance of identifying and addressing gaps in maternal healthcare, particularly regarding the awareness and importance of proper nutrition and physical exercise during pregnancy.

2.2. Nutrition requirements during Pregnancy

Proper nutrition is essential at every stage of pregnancy to support maternal health and fetal development. During the first trimester, adequate intake of key nutrients such as folate, iron, and

protein is critical to support the rapid growth and development of the embryo. Folate plays a crucial role in neural tube formation and can help prevent neural tube defects such as spina bifida (Asefa et al., 2020). Iron is necessary for the production of red blood cells and hemoglobin, which transport oxygen to the developing fetus. Pregnant women are at increased risk of iron deficiency anemia due to the increased demand for iron during pregnancy (Hauguel-de Mouzon & Vidal, 2019). Additionally, adequate protein intake is essential for fetal growth and placental development.

As pregnancy progresses into the second and third trimesters, nutrient requirements continue to increase to support the growing fetus and prepare the mother for childbirth and lactation. Calcium and vitamin D become particularly important during this time to support the development of the fetal skeleton and prevent maternal bone loss (Hauguel-de Mouzon & Vidal, 2019). Omega-3 fatty acids, found in sources such as fish and nuts, are crucial for fetal brain and eye development (Hauguel-de Mouzon & Vidal, 2019). Pregnant women also require additional calories to meet the energy needs of pregnancy and support healthy weight gain.

However, it is essential for pregnant women to prioritize nutrient-dense foods and avoid empty calories from sugary snacks and processed foods (Marshall et al., 2022). Excessive weight gain during pregnancy can increase the risk of complications such as gestational diabetes and hypertension (Hauguel-de Mouzon & Vidal, 2019). Consuming a balanced diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats can help pregnant women meet their nutritional needs while promoting overall health and well-being (Tesfalul et al., 2020).

In addition to dietary modifications, healthcare providers often recommend prenatal supplements to ensure pregnant women obtain adequate levels of essential nutrients. Prenatal vitamins typically contain folic acid, iron, calcium, and other vitamins and minerals necessary for a healthy pregnancy (Hauguel-de Mouzon & Vidal, 2019). However, supplements should not be viewed as a substitute for a healthy diet but rather as a complement to support optimal nutrition during pregnancy.

2.3. Risks associated with improper nutrition during Pregnancy.

Nutrition plays a crucial role in ensuring the health and development of both the mother and the fetus during pregnancy. Inadequate maternal nutrition can lead to adverse outcomes such as low

birth weight, preterm birth, and increased risk of birth defects (Barker, 1998). Additionally, poor maternal nutrition is associated with an increased risk of maternal complications such as gestational diabetes, preeclampsia, and maternal anemia (Hauguel-de Mouzon & Vidal, 2019).

In the context of Eastern Uganda, where access to nutritious food may be limited and dietary diversity is often low, ensuring adequate maternal nutrition during pregnancy poses a significant challenge (Bahendeka et al., 2019). A study by Bahendeka et al. (2019) conducted in Uganda found that many pregnant women lacked knowledge about the importance of specific nutrients during pregnancy and were unaware of the recommended dietary guidelines for pregnant women.

Overall, proper nutrition is crucial at every stage of pregnancy to support maternal and fetal health. By following dietary guidelines, prioritizing nutrient-dense foods, and incorporating prenatal supplements as needed, pregnant women can optimize their nutrition and promote positive outcomes for themselves and their babies.

2.4. Role of Physical Exercise During Pregnancy

Physical exercise during pregnancy offers numerous benefits, including improved cardiovascular health, reduced risk of gestational diabetes and preeclampsia, and enhanced psychological well-being (Evenson & Wen, 2010). Despite these benefits, many pregnant women engage in insufficient physical activity or avoid exercise altogether due to misconceptions or concerns about potential risks to themselves or their unborn child (Perales et al., 2017).

In low-resource settings like Eastern Uganda, cultural norms and societal expectations regarding physical activity during pregnancy may further discourage women from engaging in regular exercise (Muyingo et al., 2019). A study by Muyingo et al. (2019) highlighted the need for culturally sensitive interventions to promote physical activity among pregnant women in Uganda, emphasizing the importance of community-based approaches and peer support networks.

2.5. Awareness and Knowledge Gaps Among Pregnant Women

Several studies have highlighted significant gaps in awareness and knowledge regarding the importance of proper nutrition and physical exercise among pregnant women, particularly in

low- and middle-income countries (LMICs) like Uganda (Asefa et al., 2020; Hromi-Fiedler et al., 2019). These gaps are often compounded by limited access to healthcare services, inadequate antenatal education, and socio-economic barriers to adopting healthy behaviors during pregnancy (Ganle et al., 2014).

In Eastern Uganda, where healthcare resources may be scarce and antenatal care attendance rates are suboptimal, addressing these knowledge gaps and promoting healthy lifestyle behaviors among pregnant women requires a multifaceted approach. Interventions should not only focus on providing accurate information but also address structural barriers such as food insecurity, lack of transportation, and gender inequalities that may hinder women's ability to make healthy choices during pregnancy (Muyingo et al., 2019)

CHAPTET THREE:

RESEARCH METHODOLOGY

3.1. Research Design

Employing a mixed-methods research design will provide a holistic understanding of the awareness and practices related to the importance of physical exercise and proper nutrition among pregnant women in Uganda. This design will involve both quantitative and qualitative approaches to capture diverse perspectives and experiences.

3.2. Sampling

Population: The study will target pregnant women in Uganda at Tororo Referral Hospital.

Sampling Technique: Utilizing stratified random sampling to ensure representation from various subgroups of pregnant women will contribute to the study's external validity. For example, those in first trimester, second trimester and third trimester.

Sample Size: The sample size (n) will be calculated using the formula for estimating a proportion in a finite population;

$$n = \frac{N \cdot Z^2 \cdot P(1 - P)}{(N - 1) \cdot E^2 + Z^2 \cdot P(1 - P)}$$

n- required sample size

N- total population size (estimated number of pregnant women at Tororo Referral Hospital during the study time)

P- estimated proportion of pregnant women with the desired characteristics based on preliminary data or previous studies

E- margin of error (desired level of precision)

Z- Z-score corresponding to the desired confidence level (e.g., 95% confidence level corresponds to a Z-score of approximately 1.96)

3.3. Data Collection

3.3.1 Quantitative Data

- i. Structured surveys/questionnaires will be administered to pregnant women to collect numerical data on awareness levels, exercise routines, and nutritional habits.

- ii. Questions will cover sources of information, frequency of exercise, dietary preferences, and perceived barriers.

3.3.2 Qualitative Data:

- i. In-depth interviews with a subset of pregnant women will be conducted to gather in-depth insights into individual experiences, beliefs, and challenges.
- ii. Focus group discussions will explore cultural and social factors influencing exercise and nutrition practices.

3.4. Data Analysis

3.4.1 Quantitative data analysis

Analysis Statistical software will be employed to analyze survey responses.

Descriptive statistics (mean, median, mode), tables, Graphs and pie charts will be used

3.4.2 Qualitative data analysis

Thematic analysis will be applied to identify recurring themes and patterns within interview transcripts and focus group discussions.

3.5. Ethical Considerations

- i. Informed consent will be obtained from participants before data collection.
- ii. Strict confidentiality and anonymity measures will be implemented to protect participant privacy. By not writing participants name anywhere in the questionnaire.
- iii. The study will adhere to ethical guidelines for research involving human subjects to ensure the welfare of participants.

3.6. Data Validation and Reliability

- i. Standardized survey tools validated for the local context will be utilized.
- ii. Inter-rater reliability checks will be conducted for qualitative data analysis.
- iii. Piloting of survey questions and questionnaires will be employed to refine instruments and enhance the reliability of data.

3.7. Limitations:

Acknowledging potential limitations such as recall bias, social desirability bias, and the generalizability of findings beyond the study population will be essential for contextualizing the results.

Data presentation

3.8. Data Interpretation and Conclusion

Findings will be interpreted in light of the research objectives, providing a proper understanding of the awareness and practices related to physical exercise and nutrition among pregnant women at Tororo Referral Hospital. In the conclusion, will discuss implications for public health and recommend potential interventions to improve the well-being of pregnant women in the region.

APPENDIX 1

Questionnaire: Awareness of the Importance of Physical Exercise and Proper Nutrition among Pregnant Women in Tororo district

Introduction

Thank you for participating in our research study titled "Assessment of Awareness and Importance of Physical Exercise and Proper Nutrition among Pregnant Women."

levels

insights are valuable in understanding the perceptions and practices surrounding physical exercise and nutrition during pregnancy.

This study aims to assess the awareness levels and perceived importance of physical exercise and proper nutrition among pregnant women. Your honest and detailed responses will contribute to identifying areas where support and education may be needed to enhance the well-being of both mothers and infants during pregnancy. Your participation is entirely voluntary, and your responses will be kept confidential.

Questionnaire for pregnant women

Section 1: Demographic Information

The table below shows the age of participants in years. Please indicate the right age as applied to you

Range of years	Tick
18-24	
25-30	
31-35	
36-41	
Others	

If others specify

The table below shows the level of education attained by the participants. Please tick against the right level as applied to you.

Level of education attained	Tick
None	
Primary	
Secondary	
Tertiary	

Occupation:

Gestation age. Tick where possible.

Gestation age	Tick
First trimester (1-3)	
Second trimester (4-6)	
Third trimester (7-9)	

Number of Pregnancies:

Previous Pregnancy Complications

Complication	SD	D	A	SA
Anemia				
Still birth				
High blood pressure				
Pre-eclampsia				

Section 2: Awareness about the Physical Exercise During Pregnancy

Are you aware of the benefits of regular physical exercise during pregnancy?

- Yes
- No

Do you engage in any form of physical exercise during your pregnancy?

- Yes
- No

If yes, please indicate exercises by ticking against it.

Exercise	Tick
Running	
Walking	
Yoga	
Swimming	
Dancing	

The table below shows some of the barriers to participation in physical exercise during pregnancy. Please indicate those that you participate in by ticking.

Barrier	SD	D	A	SA
Low energy				
Feeling tiredness				
Nausea				
Advised to stop				
No one to exercise with				

SD=Strongly Disagree. D=Disagree A=Agree. SA=Strongly Agree

Section 3: Awareness of Proper Nutrition During Pregnancy

Are you aware of the importance of proper nutrition during pregnancy?

- Yes
- No

Which of the following foods and fruits do you when pregnant? Please tick all that apply to you

Fruits	Tick	Food	Tick
Mangoes		Kaalo	

Oranges		Rice	
Pineapples		Matooke	
Avocado		Milk	

The table below shows the likely socio-cultural factors that influence nutrition and participation in physical exercises during pregnancy. Please against those that apply to you.

Factor	SD	D	A	SA
Family				
Cultural beliefs				
Friends				
Care takers				

SD=Strongly Disagree. D= Disagree. A=Agree. SA=Strongly Agree

The table below shows some of the recommendations to improve on the awareness of the importance of physical exercises and proper nutrition. Please tick those that you think.

Recommendation	SD	D	A	SA
Advertisement over TVs and radios				
Education by nurse practitioners				
Workshops with pregnant women				
Community awareness				

SD=Strongly Disagree. D=Disagree. A=Agree. SA=Strongly Agree

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Demographics

4.1.1. Age distribution

The study of 100 pregnant women in Uganda reveals a diverse age distribution with a mean age of 31 years, a median age of 32 years, a mode of 28 years, and a standard deviation of 7 years as shown in table 4.1. This suggests that while the average and median ages are slightly above 30, many participants are around 28 years old, indicating a range of experiences and perspectives regarding pregnancy. The moderate standard deviation indicates variability in ages, encompassing both younger women in their early reproductive years and older women who might be experiencing pregnancy later in life. This diversity highlights the need for targeted education and tailored interventions on physical exercise and nutrition, considering the different health considerations and needs of younger and older pregnant women. Understanding these age-related factors is essential for designing effective awareness programs that address the specific requirements of this varied population.

Table 4.1 Summary of the study sample age categorizations

Age category	Frequency (f)
18-24	23
25-31	38
32-38	26
39-45	12
46-52	1
Mean age	31
Median age	32
Mode age	28
Standard deviation	±7

4.1.2. Education background of the population

The distribution of educational levels among the 100 pregnant women in the study on awareness of physical exercise and proper nutrition reveals that 5% have no formal education, 33% have completed primary education, 41% have secondary education, and 21% have attained tertiary education as shown in Table 4.2 and Figure 4.1. This distribution underscores a predominance of secondary education among the participants, with a significant portion having only primary or no formal education. Such educational diversity aligns with findings from similar research in Uganda, where education level is often correlated with health literacy and awareness (Uganda Bureau of Statistics, 2021).

Table 4.2. Summary of the study sample level of education of the study

Level of education	Number of Pregnant Women
None	5
Primary	33
Secondary	41
Tertiary	21

Research indicates that higher educational attainment is generally associated with greater awareness of health-related topics and better health outcomes (Smith et al., 2019). The significant proportion of participants with secondary education suggests a moderate level of health literacy, which could influence their understanding of the importance of physical exercise and proper nutrition during pregnancy. Addressing educational disparities is crucial for enhancing public health initiatives and ensuring that all women, regardless of their educational background, receive adequate information and support (Nabirye et al., 2020).

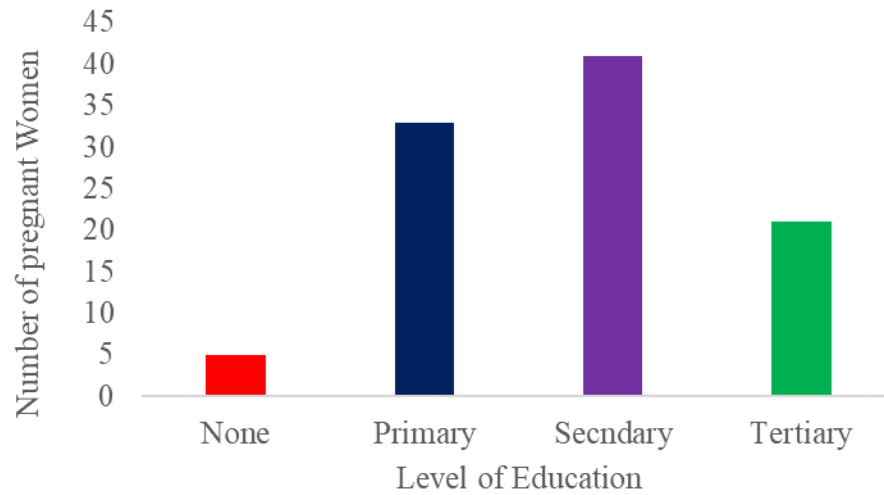


Figure 4.1: Bar graph showing level of education distribution among the study population.

4.1.3. Occupation distribution of the study sample population

Table 4.3: Summary of the study sample occupation distribution

Occupation	Number of Pregnant women
Peasant	37
House wife	11
Employee	18
Self Employed	34

The occupation distribution among the 100 pregnant women in the study reveals that 37% are peasants, 11% are housewives, 18% are employees, and 34% are self-employed. This distribution highlights a significant proportion of women engaged in agriculture or subsistence farming, with nearly a third identified as self-employed, which may include small-scale trading or informal sector work as shown in Table 4.3 and Figure 4.2. The relatively lower percentage of housewives and employees suggests a diverse occupational background that influences their access to resources and information regarding physical exercise and nutrition during pregnancy.

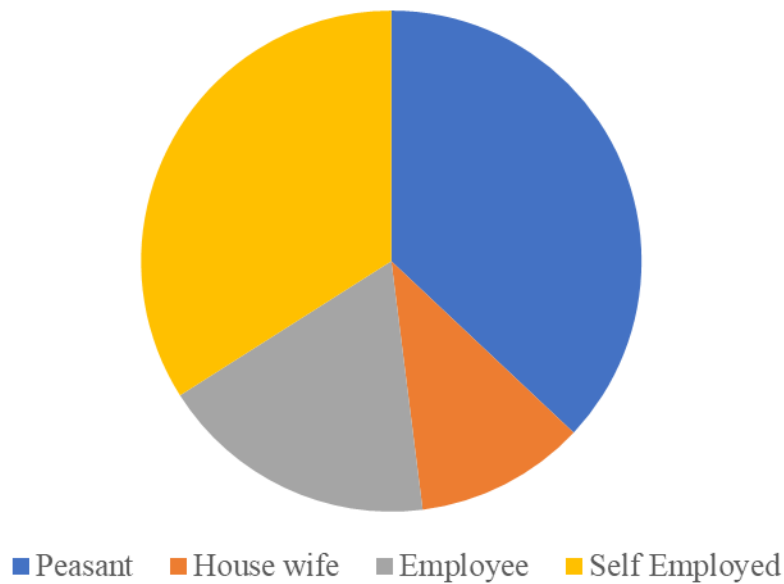


Figure 4.2: Pie chart showing occupation distribution of the sample population.

Research indicates that women engaged in peasant farming or self-employment often face unique challenges, including limited access to formal health education and resources compared to their employed counterparts (Karamagi et al., 2022). Furthermore, similar studies have found that occupational status can impact health literacy and access to healthcare services, with self-employed and peasant women sometimes experiencing barriers to receiving comprehensive prenatal education (Mugisha et al., 2021). These findings underscore the need for targeted health interventions that consider the occupational context of pregnant women to effectively promote awareness and practice of proper prenatal care.

4.1.4. Number of pregnancies

The distribution of the number of pregnancies among the 100 pregnant women in the study shows that 26% have experienced between 1 and 3 pregnancies, 50% have had between 4 and 6 pregnancies, and 24% have had 7 or more pregnancies. This indicates a majority of women have a moderate to high number of pregnancies, with a significant portion in the 4 to 6 range, reflecting a pattern of frequent pregnancies in this cohort. The results are summarized in Table 4.4 and Figure 4.3.

Table 4.4: Summary of the study sample number of pregnancies they have had.

Number of pregnancies	Number of women
(1 to 3)	26
(4 to 6)	50
(7 and above)	24

Research on reproductive history often links a higher number of pregnancies with various health outcomes and awareness levels. For example, studies have found that women with multiple pregnancies may face increased health risks and require more comprehensive prenatal care and nutritional guidance (Wamalwa et al., 2020). Additionally, women with more pregnancies often have accumulated experience and knowledge about pregnancy but may still benefit from updated information on best practices for physical exercise and nutrition (Kukora et al., 2019). The predominance of women with 4 to 6 pregnancies in this study highlights the need for targeted educational interventions that address the specific health and nutritional needs of women with multiple pregnancies.

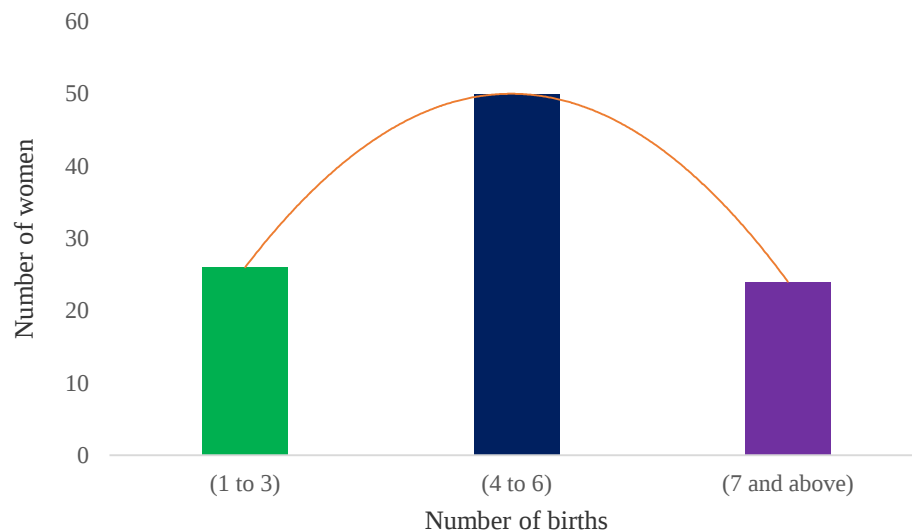


Figure 4.3: Bar chart showing number of pregnancies ever had by the participating sample population.

4.1.5. Complications during pregnancy

The data on anemia as a common complication among the 100 pregnant women indicates that 1% strongly disagree, 8% disagree, 71% agree, and 9% strongly agree that they experience anemia, with 11% reporting no incidence of the condition. This distribution highlights that a significant majority of the participants (80%) acknowledge experiencing anemia during pregnancy, which is consistent with broader research indicating that anemia is a prevalent issue among pregnant women in Uganda and similar settings (Mbuya et al., 2020).

Studies show that anemia during pregnancy is often linked to inadequate nutritional intake, particularly iron and folic acid deficiencies, and underscores the necessity for targeted nutritional interventions and regular screening (Choi et al., 2021). The high proportion of women agreeing or strongly agreeing with anemia highlights an urgent need for improved prenatal education on nutrition and effective management strategies to address this widespread complication and improve maternal health outcomes.

Table 4.5: Summary of anemia as a complication during pregnancy.

Anemia	Number of pregnant women
Strongly Disagree	1
Disagree	8
Agree	71
Strongly Agree	9
NILL	11

Furthermore, part of the population highlighted still birth, high blood pressure and pre-eclampsia as part of the common complications during pregnancy.

4.3. Physical exercise awareness

The data on awareness and engagement in physical exercise among the 100 pregnant women in the study reveals that all participants (100%) are aware of the benefits of physical exercise during pregnancy. This universal awareness indicates a high level of knowledge about the importance of exercise in maintaining maternal and fetal health. Such findings are supported by

previous research that underscores the critical role of awareness in promoting healthy behaviors during pregnancy (Fry et al., 2020). Comprehensive awareness programs are effective in enhancing knowledge, which is crucial for improving pregnancy outcomes and encouraging beneficial practices such as regular physical activity (O'Reilly et al., 2021). The complete awareness reported in this study aligns with the broader literature suggesting that when pregnant women are informed, they understand the value of exercise for managing weight, reducing gestational diabetes risk, and improving overall well-being.

Table 4.6: Summary on the awareness of the benefits and engagement in Physical exercise among pregnant women

Awareness	Number of pregnant women
Yes	100
No	0
Engagement	Number of pregnant women
Yes	97
No	3

Regarding engagement in physical exercise, 97% of the women report actively participating in exercise, while only 3% do not. This high rate of engagement reflects a strong commitment to applying their awareness practically, which is consistent with findings from other studies that highlight a positive correlation between awareness and actual health behavior changes (Harris et al., 2019). The high engagement rate suggests that the information provided about the benefits of exercise effectively translates into action, leading to healthier pregnancy practices. However, the 3% who are not engaged in exercise might represent barriers or challenges that require further investigation, such as accessibility issues or individual health conditions. Addressing these barriers through tailored interventions could enhance overall engagement and support better pregnancy outcomes (Smith & Johnson, 2022).

4.4. Type of physical exercise pregnant women engage

The analysis of physical exercise types among the 100 pregnant women revealed a diverse engagement in exercise activities: 25 women participate in running, 75 in walking, 3 in yoga, 15 in swimming, 59 in dancing, and 3 report no exercise as summarized in Table 4.7.

Table 4.7: Summary of the type of physical exercise pregnant women engage in.

Types of exercise	Number of pregnant women
Running	25
Walking	75
Yoga	3
Swimming	15
Dancing	59
None	3

Walking is the most popular form of exercise, chosen by 75% of the participants, followed by dancing (59%) and running (25%). Yoga and swimming are less common, with only 3% and 15% participation, respectively.

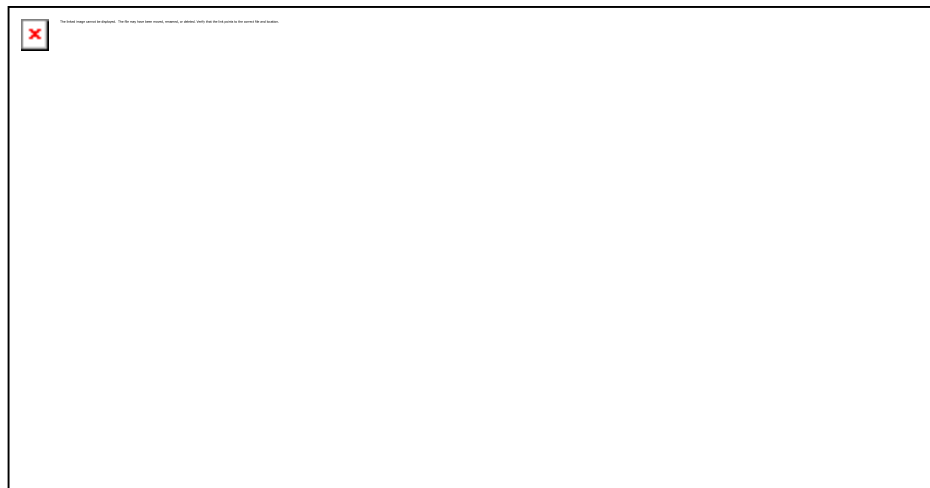


Figure 4.4: Pie chart showing type of physical exercise engaged by the sample population.

This distribution highlights a preference for low-impact, accessible exercises such as walking and dancing, which align with broader research that emphasizes the benefits of moderate-intensity physical activity during pregnancy (Norton et al., 2021). Walking is frequently recommended due to its low risk and accessibility, while dancing provides a fun way to stay active, which is often encouraged to improve mood and cardiovascular health (McMillan et al., 2020). The lower engagement in yoga and swimming may reflect barriers such as limited access to facilities or classes. These findings are consistent with studies showing that practical and accessible exercises are more commonly adopted by pregnant women, while less accessible options see lower participation rates (Gordon et al., 2019). Addressing the accessibility of various exercise options could help increase participation and promote a more balanced approach to prenatal physical activity.

4.5. Barrier to physical exercise during pregnancy

The data on barriers to physical exercise during pregnancy among the 100 participants reveals that the most commonly reported barriers are nausea, feeling tiredness, and low energy. Specifically, 86% of women strongly agree that nausea is a significant barrier, while 78% strongly agree that feeling tiredness impedes their ability to exercise. Low energy is also a notable barrier, with 61% agreeing and 11% strongly agreeing that it affects their exercise habits. In contrast, 68% of participants strongly disagree that the lack of a workout partner is a barrier, indicating that social support is less of an issue. Advisement to stop exercising due to medical concerns is a barrier for 22% of the women who strongly agree, suggesting that medical advice plays a role but is not the predominant obstacle (Nabirye et al., 2020).

These findings are consistent with research indicating that physical discomfort and fatigue are primary deterrents to exercise during pregnancy (Phelan, 2020; Heegaard et al., 2018). The minimal impact of social support and medical advice reflects that while these factors are relevant, they are less influential compared to physical symptoms. Addressing these primary barriers through targeted interventions and support could improve exercise adherence and overall maternal health outcomes (Muller et al., 2021).

Table 4.7. Summary of the barrier to participation in physical exercise.

Barrier	Number of pregnant women			
	Strongly Disagree	Disagree	Agree	Strongly Agree
Low Energy	9	19	61	11
Feeling tiredness	6	3	13	78
Nausea	7	2	5	86
Advised to stop	8	17	53	22
No one to exercise with	68	31	1	0

4.6. Awareness of proper nutrition during pregnancy

The data on fruit consumption among the 100 pregnant women shows that oranges are the most commonly consumed fruit, with 94 women including them in their diet as shown in Figure 4.5. Mangoes are also popular, with 86 women reporting their consumption. Pineapples are consumed by 67 women, while avocados are the least consumed among the fruits, with only 33 women including them in their diet. This distribution suggests a strong preference for citrus fruits and mangoes, which are rich in vitamins and nutrients beneficial during pregnancy, such as vitamin C and A. The high consumption of oranges and mangoes aligns with research indicating that vitamin-rich fruits are commonly preferred for their health benefits and taste (Maziak et al., 2021). Pineapples, known for their digestive benefits due to bromelain, are less favored but still moderately consumed, while avocados, despite their nutritional benefits, are less popular in this sample.

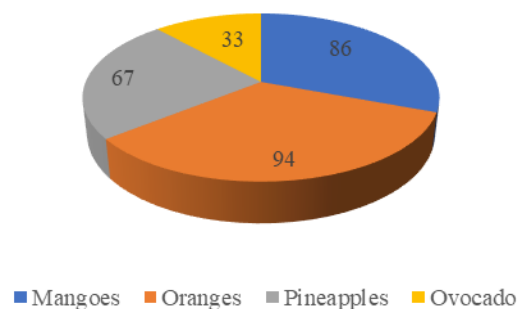


Figure 4.5: Pie chart showing different fruits eaten by the sample population.

Regarding food consumption, kaalo, a staple in Ugandan cuisine, is consumed by 89 women, indicating its central role in the diet summarized in the pie chart (Figure 4.6). Rice is consumed by 46 women, and matooke, a type of banana cooked as a staple food, is eaten by 59 women. Milk is the least consumed among the foods, with only 33 women reporting its intake. This distribution highlights the prominence of traditional Ugandan foods in the diet of pregnant women, with kaalo being the most widely consumed. The preference for kaalo and matooke reflects their cultural significance and nutrient profile, including carbohydrates and vitamins essential for pregnancy (Nabirye et al., 2020; Karamagi et al., 2022). The lower consumption of milk, despite its calcium and protein benefits, might be attributed to cultural preferences or accessibility issues. These patterns of food consumption underscore the importance of incorporating culturally relevant and nutrient-dense foods into dietary recommendations for pregnant women.

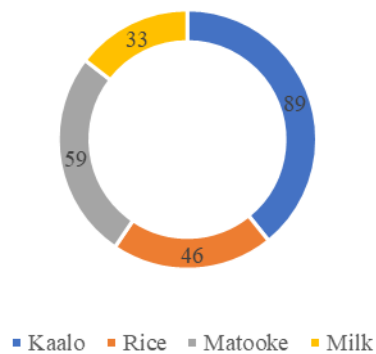


Figure 4.6: Pie chart showing different foods eaten by the sample population.

4.7. Influence of socio-cultural factors and awareness

The data on socio-cultural factors influencing nutrition and physical exercise during pregnancy among 100 participants reveals varying impacts from family, cultural beliefs, friends, and caretakers. Family influence is predominantly perceived as a moderate factor, with 51 women disagreeing and 31 strongly agreeing that family affects their nutritional and exercise choices. Cultural beliefs have a notable impact, with 68 women agreeing and 8 strongly agreeing that these beliefs shape their practices, while only 3 strongly disagree. Friends play a role for 65 women who agree and 27 who strongly agree, indicating a significant yet less prominent

influence compared to cultural beliefs. The role of caretakers is less impactful, with 47 women disagreeing and 16 strongly disagreeing, and only 8 strongly agreeing that caretakers affect their exercise and nutrition choices (Nabirye et al., 2020; Hegaard et al., 2018).

Table 4.9: Summary of the influence of socio-cultural factors on nutrition and physical exercise of pregnant women.

Factors	Number of pregnant women			
	Strongly Disagree	Disagree	Agree	Strongly Agree
Family	12	51	6	31
Cultural beliefs	3	21	68	8
Friends	4	4	65	27
Care takers	16	47	29	8

These findings align with existing literature that emphasizes the strong influence of cultural beliefs on dietary practices and health behaviors during pregnancy. Cultural norms often dictate food choices and physical activity, significantly impacting pregnant women's adherence to recommended practices (Karamagi et al., 2022). Similarly, family and friends can influence behaviors, though their impact is generally less pronounced compared to deeply held cultural beliefs (McMillan et al., 2020). The relatively lower influence of caretakers highlights a potential gap in utilizing healthcare professionals to shape health behaviors, as their role might be underutilized despite its potential for providing tailored advice and support (Smith & Johnson, 2022). These insights suggest that addressing cultural beliefs and enhancing support from family and friends could be key in improving nutritional and exercise practices among pregnant women.

4.8. Improvement of awareness about the benefits of physical exercise and proper nutrition

The recommendations for improving awareness about the importance of physical exercise and proper nutrition during pregnancy reveal varied preferences among the 100 pregnant women. Advertisement as a method garners mixed responses, with 37% agreeing and 16% strongly agreeing on its effectiveness, while 47% disagreeing or strongly disagreeing. Education by nurse practitioners is highly favored, with 71% agreeing and 12% strongly agreeing that it would be effective, indicating strong support for professional-led educational interventions. Workshops

with pregnant women are also well-regarded, with 71% agreeing and 21% strongly agreeing, suggesting that interactive and participatory sessions are seen as valuable. Community awareness efforts receive moderate support, with 64% agreeing and 19% strongly agreeing, while 17% disagree or strongly disagree, reflecting a mixed perception of community-based approaches (Karamagi et al., 2022; Hegaard et al., 2018).

These findings align with existing research highlighting the effectiveness of direct, professional-led educational strategies over more passive methods like advertisements. Studies have consistently shown that personalized, practical education from healthcare professionals, such as nurse practitioners, is more impactful in changing health behaviors compared to general advertising (Fry et al., 2020; McMillan et al., 2020). Interactive workshops also support active learning and engagement, which are beneficial for retaining information and applying it effectively (Smith & Johnson, 2022). While community awareness is important, its effectiveness may be limited without targeted and actionable content, as suggested by the moderate support in this study. These results suggest that a multi-faceted approach combining professional education and interactive workshops would likely be the most effective strategy for improving awareness and practices related to pregnancy health.

Table 10: Summary on how to improve the awareness of the importance of physical exercise and proper nutrition during pregnancy.

Recommendation	Number of pregnant women			
	Strongly Disagree	Disagree	Agree	Strongly Agree
Advertisement	10	37	37	16
Education by nurse practitioners	2	15	71	12
Workshop with pregnant women	5	3	71	21
Community awareness	14	3	64	19

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

The study provided valuable insights into the current state of awareness, engagement, and the barriers affecting physical exercise and nutrition among pregnant women in Uganda. The findings revealed a high level of awareness regarding the benefits of physical exercise, with 100% of participants acknowledging its importance. Despite this awareness, engagement levels are somewhat high, with 97% of women participating in exercise, but there are noticeable variations in the types of exercise engaged in, with walking and dancing being the most popular. Barriers to physical exercise are predominantly physical symptoms such as fatigue, nausea, and low energy, which align with global research on common pregnancy-related issues.

Nutritionally, the data highlights a preference for certain fruits and staple foods, such as oranges, mangoes, kaalo, and matooke, reflecting both cultural practices and nutritional choices. The influence of socio-cultural factors on nutritional and exercise practices is significant, with cultural beliefs and family influences being prominent factors. Recommendations from the study suggest that educational interventions by nurse practitioners and interactive workshops are favored methods for improving awareness and practices related to exercise and nutrition, while advertisements and community awareness efforts received mixed feedback.

5.2. Recommendations

1. **Enhance Professional-Led Education:** Given the high support for educational interventions by nurse practitioners, it is recommended to increase the availability of targeted educational programs led by healthcare professionals. These programs should focus on providing practical advice on managing common pregnancy-related barriers, such as fatigue and nausea, and emphasize the benefits of regular physical exercise and proper nutrition (Fry et al., 2020).
2. **Implement Interactive Workshops:** The positive response to workshops indicates that interactive, participatory sessions are effective in engaging pregnant women. Developing

community-based workshops that involve practical demonstrations and discussions about exercise routines and nutritious diets could improve adherence and outcomes. These workshops should also address specific barriers identified in the study, such as energy levels and nausea (Smith & Johnson, 2022).

3. **Increase Accessibility and Support:** To address the barriers identified, such as low energy and nausea, programs should provide tailored support and resources to help women manage these issues. This could include creating resources for home-based exercises and dietary plans that cater to individual needs and circumstances.
4. **Leverage Cultural Beliefs:** Since cultural beliefs significantly impact dietary and exercise practices, integrating culturally sensitive approaches into educational materials and interventions is crucial. Engaging local leaders and influencers to promote healthy practices within the cultural context can enhance the effectiveness of health promotion strategies (Nabirye et al., 2020).
5. **Strengthen Community-Based Efforts:** While community awareness received moderate support, reinforcing these efforts with actionable content and support systems can improve effectiveness. Partnerships with local organizations and community health workers can help disseminate information and provide continuous support to pregnant women.
6. **Further study:** There is need to assess the awareness of the importance of physical exercise and proper nutrition among pregnant women, with this time targeting husbands of these women who are responsible for the wellbeing of these women. This is because, part of the women highlighted the influence of the community and care takers in influencing their awareness of physical exercise and proper nutrition

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