



**SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF EPIDEMIOLOGY
POST GRADUATE PROGRAM**

Intention to antenatal physical exercise and associated factors among pregnant women attending antenatal care at public hospitals, Addis Ababa, 2024.

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A Thesis Submitted to Saint Paul's Hospital Millennium Medical College, School of Public Health, Department of Epidemiology for Partial Fulfillment of Requirements for The Degree of Masters of public Health in epidemiology.

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Declaration

I the undersigned agree to accept all responsibilities for the scientific and ethical conduct of the research project. I was provided timely progress report to my advisors and seek the necessary advice and approval from my primary advisors in the course of the research. I was communicating timely to my advisors all stakeholders involved in the study.

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LIST OF ACRONYMS AND ABBREVIATION

ACOG		American college of obstetrics and gynecology
AOR	.....	Adjusted odd ratio
ANC	.....	Antenatal care
ANEx	.....	Antenatal exercise
COR	.....	Crude odd ratio
CI	.....	Confidence interval
EDHS	.....	Ethiopian Demographic Health survey
ETB	.....	Ethiopian birr
HMIS	.....	Health management information system
MMR	.....	Maternity mortality rate
MOH	.....	Ministry of Health
OR	.....	Odd Ratio
PA	.....	Physical Activity
P	.....	Prevalence
SPHMMC	.....	Saint Paul hospital millennium medical college
SDG	.....	Sustainable Development goal
SPSS		Statistical package for social science
TBP		Theory of planed behavior
WHO		World Health Organization

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Summary

Background: Regular physical activity throughout pregnancy provides advantages for women's bodies and minds as well. It is well documented that its effect is in the risk reduction of pre-eclampsia, diabetes, and other sedentary-related health problems. The intention to engage in prenatal physical exercise is a strong predictor of physical activity throughout pregnancy, which is a beneficial behavior for prenatal mothers.

Objective: To assess the prevalence of intention to engage in prenatal physical exercise, and the associated factors among pregnant women attending antenatal care at public hospitals, Addis Ababa, 2024."

Methods: An institutional-based cross-sectional study was conducted by using systematic random sampling method from January to August, 2024. Online Kobo toolbox and SPSS version 27 were used for data collection and analysis respectively. Binary and multivariable logistic regression was used for analysis, and statistical significance was declared at a P value <0.05 in multivariable logistic regression and the Odds ratio was used to determine the effect of association between dependent and independent variables with 95% CI.

Results: With a response rate of 98.2%, the prevalence of intention to do antenatal physical exercise during pregnancy was 59.9%. Source of information from mass media with AOR=2.65, (95% CI:1.33, 5.27), women's attitude with AOR = 3.14, (95% CI:1.35, 7.30), having five or more prenatal care with AOR= 4.75, (95% CI :1.26, 17.84), pre-pregnancy physical exercise habits with AOR= 2.60, (95% CI: 1.28, 5.28), adequate supporting facility with AOR =3.47, (95% CI:1.71, 7.02), and have no enough time with AOR=0.28, (95% CI: (0.13, 0.62) were significantly associated with intention to antenatal physical exercise.

Conclusion: More than half (59.9%) of the study participants intended to do prenatal physical exercise. Before-pregnancy physical exercise habit, increased frequency of prenatal care visits, having a favorable attitude, and using mass media have a positive influence on the intention to practice antenatal physical exercise. Therefore, maternity care providers and other responsible bodies should promote healthy behavior change programs to improve pregnant mother's attitude and awareness to do physical exercise.

Keywords: Antenatal physical exercise, Intention, Pregnant women, and Antenatal care

1. INTRODUCTION

1.1. Background

Encouraging a healthy lifestyle and receiving more health message is very vital thing for pregnancy (1). In many countries exercise is now a vital part of prenatal care and a crucial part of women's life (2). Being physically active during pregnancy is a preventive health behavior and it is highly predicted by pregnant women intention towards physical exercise(3). Individual Health behavior affect quality of life, mental and physical health, and regulate more than 50% of illness(4).

Physical activity is a natural action generated by the contraction of skeletal muscles that require energy expenditure for all stage of life to improves and maintains cardio respiratory fitness(5). It including exercise (a planned, systematic, and intended movement to maintain or increase physical fitness), work, family care and leisure time activities(6).

Antenatal exercise, also called maternal or prenatal exercise, is any kind of physical exercise that is considered safe for pregnant women. These specific physical activities include aerobics, cycling, stretching, relaxation, muscle strengthening, pelvic floor, abdominal and back care exercise, swimming, and breathing exercise (7).

Antenatal physical exercise is the best strategy for promoting health and preventing diseases, significantly lowering the risk of chronic metabolic diseases during pregnancy (8). Different evidence indicates that engaging in regular physical activity during pregnancy has positive effects on the body and mind of women and fetus as well as safe for the development of fetus and the wellbeing of mother(9,10). Antenatal Aerobic physical exercise should be encouraged after 12 weeks gestational age with some modification due to physical and metabolic changes and fetal requirements after evaluating by obstetricians - Gynecologists and other obstetrics care provider(11). Because it results to increase benefit and minimize risk for most pregnant women and the fetus (11).

Antenatal physical exercise have benefits for mother such as; decreasing early onset of cardiovascular diseases by preventing the risk of preeclampsia two-times(5,12,13). Preventing and treating pregnancy induced diabetes mellites and glycemic control achieved only by exercise, need less insulin, and avoid the need of insulin entirely compared to

diet(5,10). Improve the risk of cesarean birth by 15%; prevent excessive antenatal weight gain, operational vaginal delivery, and sleeping disorder(5,14). Additionally it decrease lower back discomfort and pelvic pain and improves maternal quality of life and mental health status(5,15,16). And helps pregnant mothers to ready their bodies for a simpler and shorten duration of labor and recovery process(17,18).

It also has positive health effects on the fetus, which includes, decreased delivery of large-for-gestational-age baby by 31%, decreases obesity at birth and during early children period(19). And enhances the function of the cardiac autonomic nervous system for fetus and neonate(13,20,21). Enhance newborns appear to have better neurological and mental development, be calmer, leaner, cleverer, and scored much higher on tests of general intelligence and oral language(19,21).

Women's intention or willingness to start exercising during pregnancy and after birth is important to support lifelong health habits during pregnancy and exercise between pregnancies may have positive impact on fitness, mood and weight loss(22). Different aerobic exercise, resistance training activities, and gentle stretching and/or yoga are strongly recommended during pregnancy(18). Specifically modified yoga during pregnancy appears to be helpful in lowering women's anxiety during labor and decrease depressive symptoms(23). A study show that third trimester gestational age 17% times intention to antenatal exercise than first trimester, primary level of education 43% times more intention than those who have no formal education, increasing score of attitude to antenatal exercise 34% times intended to antenatal exercise than low score of attitude (24–28).

And also lack of sufficient resources, required skills, and favorable environment are affect intention towards behavior(29). A pregnant woman who had strong beliefs regarding the benefits and positive outcomes of physical exercise, had higher levels of intention to engage in the antenatal exercise. And who had a higher intention to be physically active had higher levels of physical activity (antenatal exercise) behavior(28). Improving pregnant women's sense of control (perceived as can be exercise) seems to be one way to improving the uptake and maintenance of exercise throughout pregnancy (i.e. increase performing their intention).

1.2.Statement of problem

Currently, The world health organization (WHO) recommend simple to moderate aerobic exercise for pregnant women at least 150 minutes per week (or 30 minutes per day) during their pregnancies and postnatal period if no obstetric or medical complications (5,8). However pregnant women spend greater than half of their time with living a sedentary behavior (physically inactive) or do not meet the WHO physical exercise guidelines during pregnancy (7,30). Evidences have shown that many women consider rest to be more important than activity and exercise during pregnancy(26). Behavior change is directly influenced by an intention to engage the behavior. Because of goals will help an individual successfully practice a behavior at any situation (31).

Despite being aware of the advantages of prenatal exercise, most prenatal women are less active throughout pregnancy, according to earlier research(7). Worldwide, 88.9% of women in China, 78.5% of women in Ireland, 60% of women in US, 58% of women in Malaysia, 52.4% of women in the UK, and 16.4% of women in Saudi Arabia did not exercise while pregnant(16,32–34). And in Ethiopia 63.94% of pregnant women not fulfil antenatal physical exercise guideline recommended by WHO (35). Pregnancy associated to significant physical, metabolic, and emotional changes that may risk physically inactive for pregnant women(15).

A pregnant woman's quality of life and level of regular antenatal exercise practice are negatively impacted by pregnancy-related changes such as pelvic and back pain, urine incontinency, oedema, an unsteady gait, lower limb discomfort, and diastasis rectus (36–40). The most common reason for low level of regular antenatal exercise practice is lack of intention towards antenatal exercise(28). Lack of intention to do antenatal physical exercise is associated with a pregnant women's beliefs that physical exercise to be harmful to her and their baby, perceptions of already being active, the effect of the environment, psychological discomfort and lack of time, advice, information, and social support (41,42).

Furthermore, pregnancy related medical conditions due to antenatal physical inactivity might cause fetal pathologies such as:- limited intrauterine growth, decrease amniotic fluid, pre - mature placental separation, premature birth, and perinatal mortality(43). Increased gestational weight retentions during pregnancy or fetal overweight have more than 40% risk of childhood obesity(44). Due to the above risk factors and other immeasurable and preventable pregnancy related complications, maternal and perinatal morbidity and mortality

was increased. Whereas noncommunicable diseases disorder such as pregnancy induced diabetes mellitus, hypertensive disorder, and mental health disorder are related to maternal deaths(45,46).

Consequently, WHO created action plan to decrease physical inactiveness during pregnancy for a minimum ten percent up to 2025 and fifteen percent up to 2030 (47). In Ethiopia the direct cause of sedentary life (physically inactive) during pregnancy not well understood. But several evidences suggested that majority of pregnant women believed that antenatal exercising would be harmful to the developing fetus and others they have not receive any counseling regarding antenatal exercise during ANC (48). Physical exercise behavior of pregnant women would be highly predicted by their intention to do exercise(49). This indicate conducting urgent study for how to improve the intention towards antenatal physical exercise for pregnant women in Ethiopia.

Even though one study was done on intention towards antenatal physical exercise and factors affecting among pregnant women at Debre Markos, north Ethiopia. But the magnitude of intention to do antenatal physical exercise was measured by only walking physical exercise even there are other antenatal physical exercises recommended during pregnancy (e.g. breathing exercise, back care exercise, pelvic floor exercise etc.). Therefore, the aim of this study to investigate the prevalence of intention to engage in prenatal physical exercise, and the associated factors among pregnant women who was attending antenatal care at public hospital, Addis Ababa, Ethiopia,2024.

1.3. Significance of the study

Physical inactivity and excessive weight gain during pregnancy have been known as independent risk factors for maternal obesity and pregnancy related pathologies, including GDM, as a result, many thousand pregnant women pass away due to preventable pregnancy related complication. In addition, many Ethiopian pregnant women are at risk of having cesarean section, operative delivery, low back pain, and antenatal and postnatal depression. The importance of studying intention and practice of physical exercise during antenatal period lies in its potential to help pregnant women avoid complications associated with physical inactivity. It is possible to improve physical exercise habits during pregnancy and create a tailored health education program about antenatal physical exercise based on the research findings.

This study will be important role to improving maternal health care service by including or promoting antenatal exercise behavior change during pregnancy. And it generating information for health care provider about intention towards antenatal physical exercise behavior and factors that influence intention to do exercise during pregnancy and identify important miss understanding of pregnant women about maternal and fetal outcome of antenatal exercise during pregnancy. To create opportunity for pregnant women, exercise regularly. furthermore, this study findings used as evidence to antenatal exercise counseling for pregnant women. The result of this study used as baseline and give insight for health care providers, academic institutions, donors and funding agencies, and policymakers concerned on maternity care to planning for future and developing or incorporating important antenatal exercise principles and guidelines for maternity care service during pregnancy. Finally this study finding will be used as a baseline to conduct large-scale study on intention towards antenatal physical exercise and associated factors among pregnant women in Ethiopia. Generally, this study was investigating the prevalence of antenatal physical exercise practice and the prevalence of intention to do physical exercise during pregnancy and differentiate which barriers and other factors significantly associated with intention to do antenatal physical exercise among pregnant women who was attending antenatal care at public hospital, Addis Ababa, Ethiopia, 2024.

2. LITERATURE REVIEW

2.1.General concept of antenatal physical exercise

An aerobic activity is a rhythmic movement of large muscle of the body like legs and arms for to rise heart rate enough, sweating start, and talk normally, but cannot sing (50). Example of moderate antenatal physical exercise are: general gardening (digging, weeding, or raking) and brisk walking and at minimum of 150 minutes by dividing in to 30-minute per day workouts for five days of a week(11). But if the beginner of antenatal exercise start by five minute and increase the duration of exercise and intensity by gradually for each week and until stay active or can perform 30 minute per day(50). A pregnant women can keep doing physical exercise if a woman active before pregnancy by approving gynecologist and obstetrician and other maternal health care giver; But may need to increase eating more calories food if starting antenatal physical exercise when weight lost(51).

2.1.1. Contraindication of moderate antenatal physical activity

All pregnant women have no the following contraindications can involve in antenatal physical exercise during pregnancy(51). Pregnant women having Absolut contraindications(Preterm labor, excessive vaginal bleeding, third trimester placenta previa, rupture of membrane, sever hypertension, intrauterine growth restriction, cervical incompetency, triplite and grater multiple pregnancy, uncontrolled metabolic disorder, thyroid disease, and other serious and systemic disorders like cardiovascular disease and respiratory disease may continue their usual living activities but should not be involve in more difficult activities(51).

The following are relative contraindication of antenatal physical exercise during pregnancy like having a history of spontaneous premature birth, malnutrition, respiratory and cardiovascular disease, anemia with symptom, eating abnormality, recurrent abortion, third trimester twin pregnancy, gestational hypertension, and other medical disorders) the women should be assessed by gynecologist and obstetrician before doing moderate to strenuous intensity antenatal physical activity(51).

2.1.2. Avoiding physical activity during pregnancy

Physical activities to be avoided during pregnancy are risk for danger of falling and physical contact which may result for fetal injury. Examples of physical activity not recommended during pregnancy are: - non-stationary cycling, horseback riding, gymnastics or Olympic lifts, downhill skiing, and ice hockey. Others sports that increase risk of hit in the abdomen of pregnant women should be avoided are: - soccer, boxing, basketball, skydiving, un modified yoga or Pilates, scuba, and activities at above 6000 feet (51). Warning sign during antenatal exercise and stopping regular exercise when the following sign present: vaginal bleeding, feeling of faint or dizzy, chest or calf pain and swelling, shortness of breathing before starting exercise, muscle weakness, gush of or linking of fluid from the vagina, and regular contraction of the uterus(11).

2.2. Literature review related to intention towards antenatal exercise

Intention towards antenatal physical exercise has been found to be a positive predictor of antenatal exercise behaviors during pregnancy (32).

A comparative cross-sectional study conducted on beliefs towards antenatal physical exercise among Australian and Chinese pregnant women show that the mean intention to do antenatal exercise is 5.7 in Australian and 4.9 in Chinese pregnant women(52).

A cross sectional quantitative study in China on intention towards PA during pregnancy with 477 participant found that 63.9% have positive intention to engage PA during pregnancy(24).

And another across sectional survey conducted in Taiwan based on planned behavior theory to determine pregnant women's intention to involve in regular antenatal exercise show that 64.2% of the participant were intended to do regularly antenatal physical exercise until delivery; and the variation in intention to do regular exercise was 59% (25).

Related study in north Ethiopia Debre Markos about magnitude of intention towards antenatal physical exercise and determinate factors the mean value of intended to do antenatal physical exercise was 3.8(27).

2.3. Literature review related to associated factors of intention towards antenatal physical exercise

Behavioral intention towards antenatal exercise affected by motivational factors such as: - the attitude of the individual towards the behavior going to perform or adapt, social support, perception of individual about regular antenatal exercise easy or difficult to performing when pregnancy (27,53). It may also influenced by sociodemographic factors, obstetrics factors, and knowledge about antenatal physical exercise (27).

2.3.1. Sociodemographic characteristics

A cross-sectional study in Iran found on antenatal physical activity barriers and associated factors during pregnancy show that participants having low education level were significantly associated with antenatal physical inactivity during pregnancy. Such as lack of advice from health care providers. But having pre-pregnancy exercise habit positively associated with antenatal physical exercise when pregnant (54).

Institutional based cross-sectional study conducted in Debre Markos, south Ethiopia show that participant level of education was positively corelated with intention towards regular antenatal physical exercise. pregnant women primary level education was 0.43 ($B = 0.43; 95\% \text{ CI } 0.25-0.61$) times more intention towards antenatal exercise than participants with no formal education (27).

Another community-based cross-sectional study found in Araba-Minch, Ethiopia showed that participants' husbands having primary education levels were negatively associations with engaging in antenatal exercise. and occupation status showed significant associations with initiating antenatal exercise(55).

2.3.2. Obstetrics factor

According to a cross-sectional study done in Scotland on intentions toward antenatal physical exercise and resting throughout pregnancy based on planned behavior theory show that

Gestational age of pregnancy had a significant negative association with intention towards prenatal physical activity ($\beta = -0.23$, $p = 0.01$)(26).

A cross-sectional study in Iran found antenatal physical activity barriers and associated factors during pregnancy show that high body mass index, and fear of pregnancy-related symptoms and complications such as: - nausea and vomiting, swelling or heaviness, and drowsiness associated with physical inactivity during pregnancy(54).

A study conducted in Debre Markos; south Ethiopia shows that pregnancy gestational age was positively correlated with intention towards regular antenatal physical exercise. In which participants during 2nd and 3rd trimester 0.19 ($B = 0.19$; 95% CI 0.04–0.33) times and 0.17 ($B = 0.17$; 95% CI 0.02–0.32) times intention towards antenatal exercise than participants in early pregnancy(27).

A community-based study found in Araba-Minch, Ethiopia on prenatal exercise and associated factors among pregnant women shows that a participants having miscarriage history are negatively associated with engaging in antenatal exercise(55).

2.3.3. Awareness and knowledge of antenatal physical exercise

A pregnant women worry about sports and exercise during their pregnancy, due to a lack of knowledge about antenatal exercise, including when, what types of exercise are recommended, and how to perform them. Because their behavior is influenced by false information, these false beliefs cause pregnant women to lead an inactive lifestyle(56).

A cross-sectional studies in Germany show that past physical exercise behavior may directly affect intentions to do antenatal exercise and/or actual antenatal exercise behavior during pregnancy(29).

A hospital-based cross-sectional study in Brazil showed that the participants having exercising habits before pregnancy and enough antenatal exercise guidance during ANC were significantly and positively associated with engaging in antenatal exercise ($OR = 6.45$; CI 95% 4.64–8.96) and, ($OR = 2.54$; CI 95% 1.80–3.57) respectively(57).

A study in Iran found on antenatal physical exercise barriers and factors associated with pregnancy show that participants having pre-pregnancy exercise habits and lack of

knowledge about antenatal exercise were significantly associated with antenatal physical exercise when pregnancy (54).

According to a mixed study on unproven antenatal physical activity obstacles during pregnancy conducted in South African pregnant mothers show that, insufficient knowledge on antenatal physical exercise intensity and dosage from healthcare providers was found to have a negative correlation with antenatal physical exercise (58).

A cross-sectional study found in South Africa on antenatal physical activity among pregnant women shows that (70.2%) of participants use radio, television, and other media to receive information about antenatal physical exercise during pregnancy(59).

A community-based study found in Araba-Minch, Ethiopia on prenatal physical exercise and associated factors among pregnant women shows that participants who lack recommendations and enough information about antenatal exercise by health care providers were negatively associated with initiating antenatal exercise. And participants having inadequate knowledge about antenatal exercise were negatively associations with engaging in antenatal exercise(55). However, participants having pre-pregnancy regular exercise habits have significant associations with initiating antenatal physical exercise (55).

2.3.4. Attitude towards antenatal physical exercise

A metanalysis study conducted in the United Kingdom found that Attitude towards antenatal physical exercise is significantly associated with positive intention towards antenatal physical exercise ($p= 0.001$, 95% CI (0.43- 0.72))(28).

A randomized control trial study in Denmark on the effects of enablers of physical exercise among pregnant mothers shows that well-being of fetal and maternal health decreased pregnancy-related discomfort, duration of labor and delivery, and physical appearance and fitness improvement were important enabler factors of antenatal physical exercise during pregnancy(60).

A comparative study conducted in Pennsylvania titled Antenatal Physical Exercise Predictors in Obese and Normal Women During Pregnancy shows that belief in controlling weight, enabling perceived beliefs of controlling nausea and fatigue during the first trimester were significant factors for antenatal physical exercise during pregnancy(4).

According to a comparative cross-sectional study on prenatal physical exercise beliefs between Chinese and Australian pregnant women, attitudes toward prenatal physical exercise in Australia were significantly correlated with intentions to engage in prenatal physical exercise ($p = 0.006$, 95% CI 0.089, 0.543) (52).

According to a cross-sectional study done in Debre Markos, south Ethiopia, intention to engage in physical activity during pregnancy increased by 0.45 times ($B = 0.45$; 95% CI 0.33–0.57) and was substantially correlated with attitude toward such exercise (27).

A community-based study found in Araba-Minch, Ethiopia on prenatal physical exercise and associated factors among pregnant mothers shows that participants who have a fear of antenatal exercise associated with women and fetal risk significant associations to initiate antenatal exercise(55).

2.3.5. Barriers to antenatal physical exercise intention during pregnancy

A study shows that being open to new information and the perceived benefits of exercise is critical to determining exercise participation and individuals high score for conscientiousness are self-disciplined and diligent in carrying out behaviors that are well-planned (behavioral intentions). But lower conscientiousness scores are associated with decreased intention to exercise and lower abilities to plan for exercise (61).

A study conducted in Scotland on intentions toward antenatal exercise and rest during pregnancy show that positive attitude towards antenatal physical exercise is significantly associated with positive intention towards antenatal exercise(26).

A comparative study conducted in Pennsylvania intitled on antenatal physical exercise predictors in obese and normal women during pregnancy show that belief of having support during first trimester were significant factor for antenatal physical exercise during pregnancy(4).

A comparative cross-sectional study conducted on beliefs towards antenatal physical exercise among Australian and Chinese pregnant women show that Australian pregnant women perception of lack time to do antenatal physical exercise was negatively associated with intention towards antenatal physical exercise ($p < 0.001$) (52).

A systematic review study conducted in Pakistan and south Africa, entitled on antenatal physical activity and influencing factors among pregnant women show that the factors such

as affordability and availability safe environments, gyms and fitness centers for antenatal exercise and family and friend support are factors encouraging physically active during pregnancy. Whereas perception of pregnant women towards antenatal physical exercise show that cold weather and neighborhood conditions were encouraging to physically inactive during pregnancy (10).

A cross-sectional study conducted in Iran entitled on antenatal physical exercise barriers and factors among pregnant show that the factors such as lack of family and friend support, motivations, time, regular schedule, adequate facilities, and air pollution were significantly associated with physically inactive(54).

A mixed study conducted in south Africa on unproven factors towards antenatal physical exercise among pregnant women showed that barriers of intention towards antenatal exercise such as lack of energy and time, pregnancy related tiredness, exhaustion, and discomfort, during pregnancy(58).

2.4. Conceptual framework

The concepts of Intention towards antenatal physical exercise and associated factors are adapted from literatures of Zhu G, et al, 2020 in China; Zheng H, et al, 2020., and Addis A, et al, 2022 in Ethiopia(24–29,61); And modified based on the research objective. This conceptual framework considers sociodemographic variables, obstetrics variables, awareness and knowledge towards antenatal physical exercise, attitude towards prenatal physical exercise, and barrier to antenatal physical exercise are directly associated with intention to antenatal physical exercise and these variables considered as a predictor(independent) variable. And intention to antenatal physical exercise is a dependent variable.

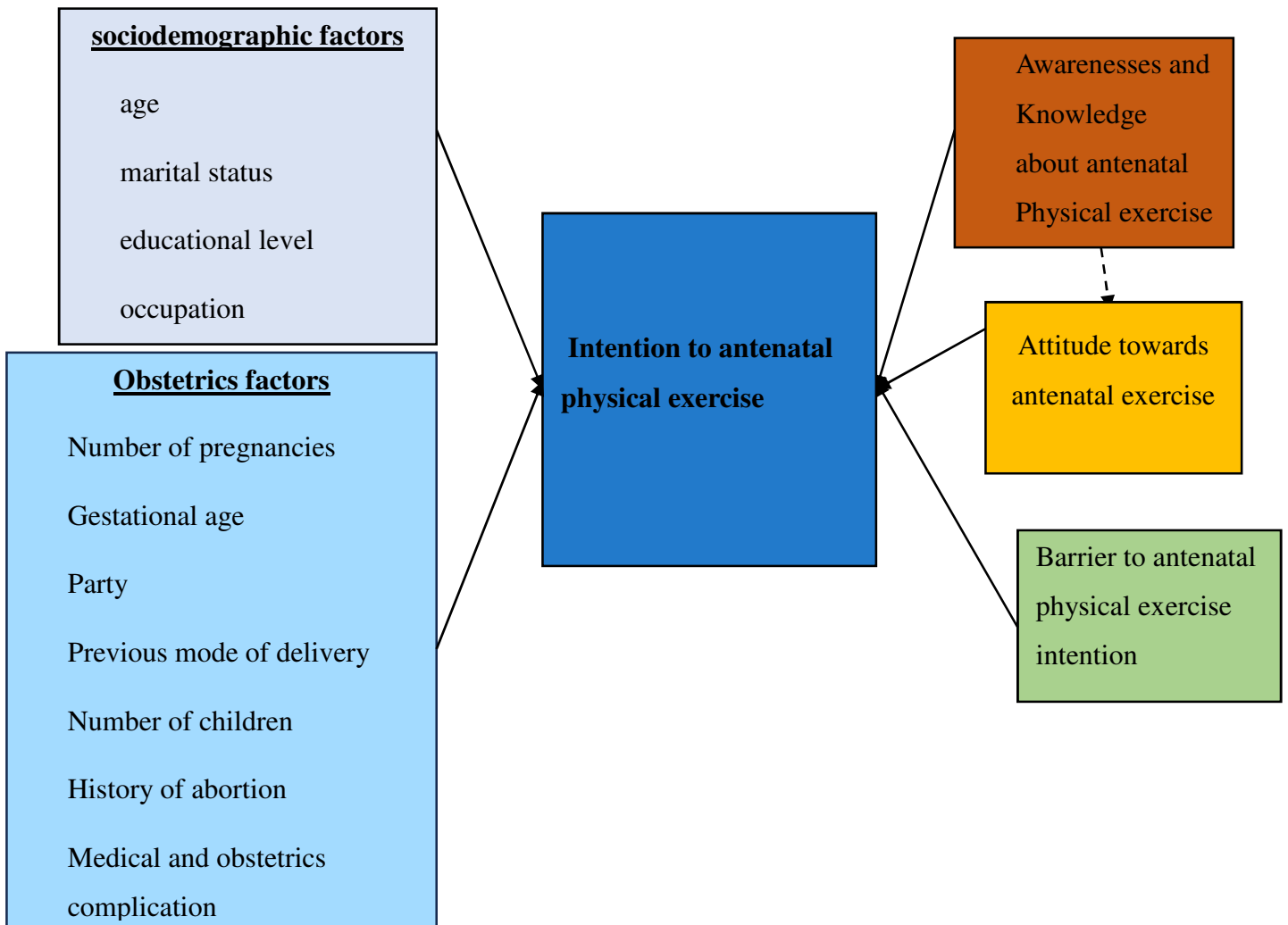


Figure 1: A conceptual framework on prevalence of intention towards physical exercise and associated factors for ANC attending pregnant women at public hospital Addis Ababa, Ethiopia.

3. OBJECTIVE

3.1. General objective

To assess the prevalence of intention to engage in prenatal physical exercise, and the associated factors among pregnant women attending antenatal care at public hospitals, Addis Ababa, Ethiopia, 2024."

3.2. Specific objective

3.2.1. To determine the prevalence of intention towards antenatal physical exercise among pregnant women at public hospital Addis Ababa, Ethiopia, 2024

3.2.2. To identify factors influencing intention towards antenatal physical exercise among pregnant women at public hospital, Addis Ababa, Ethiopia, 2024.

4. METHODS AND MATERIALS

4.1. Study area and period

The research was carried out in Addis Ababa, Ethiopia's capital city, from January to august, 2024 among women who have ANC follow-up. A total area of the city is 527 square kilometers, administratively divided into 11 sub-cities and 121 districts (namely as "woredas"), with a population of over 5.461million people and a growth rate of 4.46 percent (Addis Ababa, Ethiopia Metro Area Population 1950-2023). Addis Ababa has 13 government hospitals spread across 11 sub-cities (five federal hospitals, six under the Addis Ababa health bureau, one operated by the police force, and once owned by the armed forces). The hospitals for this study are picked using a lottery method, the hospitals include alert hospital, black lion referral hospital, Saint peter referral Hospitals, and Saint Paul hospital millennium medical college. by calculating the average three-month number of ANC follower from 2023 HMIS for alert general hospital, black lion referral hospital, Saint peter referral Hospitals, and Saint Paul hospital millennium medical college are 1000, 1300, 900, and 1500 respectively. The study was conducted in selected public hospitals of Addis Ababa, Ethiopia from January to august 2024.

4.2.Study design

Institutional-based cross-sectional research design was used to conduct the study.

4.3.Population

4.3.1. Source population

All pregnant women who have ANC follow up in Addis Ababa public hospitals during data collection period.

4.3.2. Study population

All pregnant women who have ANC follow up at selected four public hospitals in Addis Ababa during data collection period.

4.4. Eligibility criteria

4.4.1. Inclusion Criteria

All pregnant women greater than 12-week gestational age and who having antenatal follow-up in selected health institution during data collection period.

4.4.2. Exclusion Criteria

Pregnant women who were unable to be interviewed due to serious illness and physical or mental problems during the period of data collection.

All pregnant women who have medical and obstetrics contraindication to do antenatal physical exercise during the period of data collection.

4.5. Sample size determination

The required sample size (n) was determined using a single population mean formula considering following assumption n=339 from previous researched sample size in Ethiopia (27).

$$Z_{\alpha/2} = \text{Confidence interval (95\%)} = 1.96$$

$$SD = \text{Standard deviation} = 2$$

$$SE = \text{Standard error of mean} = \text{standard deviation} / \text{Square root of } n$$

$$= 2 / \text{Square root of } 339 = 2 / 18.412 = 0.109$$

$$n = \text{previous study sample size}$$

$$\text{Precision} = Z_{\alpha/2} \times \text{standard error of mean} = 1.96 \times 0.109 = 0.214$$

$$\text{Non-response rate } 5\%$$

Double population mean formula, sample size(n)= $2 \times (Z_{\alpha/2} + Z_{\beta})^2 \times \sigma^2 / (\Delta)^2$; it consider primary level of education, attitude towards antenatal exercise and gestational age was significantly associated with intention to antenatal physical exercise from previously study done at north Ethiopia Debre Markos(27).

Table 1 Minimum sample size calculation for factor analysis

characters	$Z\alpha/2$	Power= 80%	Variance= σ	Δ =effect of interest	n=sample size
primary level of education	1.96	0.84	0.79	0.43	n=67
attitude	1.96	0.84	0.79	0.34	n=107
3 rd trimester gestational age	1.96	0.84	0.79	0.17	n=430

Assuming 5% non-response rate the final sample size(n)= 430+ 22, n=452//

4.6.Sampling procedure

Firstly, Systematic random sampling technique was used to identify the study subjects. From the three-month or from September -November 2023 reports of each hospital indicate that the average number of pregnant women attending antenatal care in one month at alert compressive hospital, black lion referral hospital, Saint peter referral Hospitals, and SPHMMC was 1000, 1300, 900 and 1500 respectively. The sampling interval was calculated by using a formula, $k=N/n$ which is, $K=4700/452=10$. To start data collection, the first ten women from each selected public hospital who came to ANC clinic for their ANC services will be given numbers 1-10 only one number for each and one of them selected by lottery method for each public hospitals from first ten women. The study unit was selected every 10 intervals from the women who was selected for each health facility until the desired sample size was attained. In case of unwillingness to participate, the immediate next eligible was taken as participant.

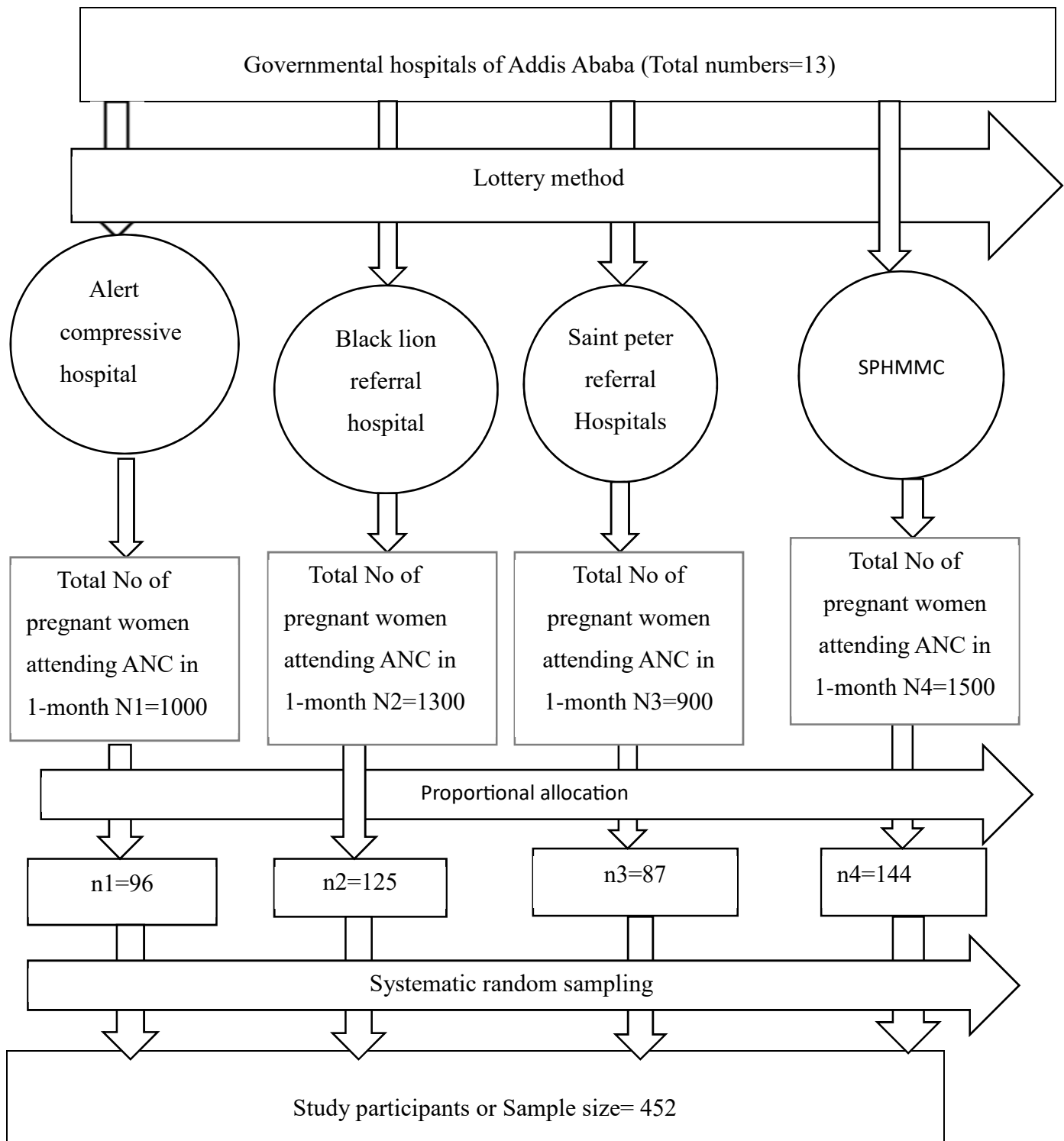


Figure 2: schematic presentation of sampling techniques for having antenatal follow up of pregnant women at selected hospitals of Addis Ababa, 2024.

4.7. Variables

4.7.1. Dependent variables

Intention to antenatal physical exercise

4.7.2. Independent variables

Demographic variables

Age

Marital status

Educational level

Occupation

Obstetrics variables

Number of pregnancies

Parity

Gestational age

Number of antenatal care visit

Previous mode of delivery

Number of children

History of abortion

Medical and obstetrics history

Awareness and knowledge

Attitude

Barriers to antenatal physical exercise intention

4.8. Operational and standard definitions

Physical exercise: is a physical activity which is purposive, planed, structured and repetitive bodily skeletal movements that are done to improve one or more components of physical fitness(11).

Antenatal physical exercise: is a physical exercise performed during the pregnancy period to improve the physical and psychological well-being of women during pregnancy and prevent pregnancy-induced pathologies(62).

Intention to antenatal physical exercise: readiness/willingness to do antenatal physical exercise (to be physically active), it measured by four items having five-point Likert scale with a total score between four and twenty. participants who scored greater than 60%(score 12 and greater) indicate **intended** to do antenatal physical exercise and participants who scored less than 60%(scored less than 12) indicate **unintended** to do antenatal physical exercise (24,27,63).

Attitudes: attitude towards antenatal physical exercise or how actions will influence outcomes. it measured by eight items having five-point Likert scale with a total score between eight and fourteen. participants who scored greater than 60% (score 24 and greater) indicate **Favorable attitude** towards antenatal physical exercise and participants who scored less than 60% (scored less than 24) indicate **unfavorable attitude** towards antenatal physical exercise(63).

Adequate Knowledge: Participants answered correctly from 19 knowledge questions, scored greater than, and equal to mean score of knowledge questions(27).

Inadequate Knowledge: Participants answered correctly from 19 knowledge questions and scored less than the mean score (27).

Mass media exposure. Accesses to one of the three media at least once a week (Watching television, listening to the radio, and reading newspaper)(64).

4.9.Data collection tools and procedure

A structured questioner was used to collect the data which is adapted and modified from previous different similar and related studies (24–29,61). The data collection tool has; 6 sociodemographic questioners, 11 obstetrics questioners, 6 awareness and 19 knowledge towards antenatal physical exercise questioners with Cronbach alpha of 0.702, 8 attitude towards antenatal physical exercise questioners with Cronbach alpha of 0.76, 8 barriers to antenatal physical exercise intention questioners and 4 intentions to do antenatal physical exercise questioners with Cronbach alpha of 0.89. Four nurse who have experience was recruited for data collection. And the supervisor was one MSc midwives who had experience

in supervision. The data was collected by face-to-face interviewing method by using online kobo toolbox application. Every participant was invited as a study subject after a brief explanation of the aim. And the collection was continued based the willingness from April to May.

4.10. Data quality assurance

To check consistency, English version questionnaire was translated into Amharic language and again translated into English version by two MSc midwife, two gynecologist, and two public health experts. Training was given to the data collectors and supervisor by using training manuals for 1 days on the objectives of the study, method of data collection and the tools prepared, and also, before data collection they were oriented about ethical principles and data management. The questionnaire was pretested within 23 (5%) of the sample population at minnilikII general hospital. And was modified based on pretest. During the data collection, the investigator was checking the completeness and adequacy of the data daily and was corrected them based on the problems identified. In addition, the researcher was monitored and evaluated for the overall data collection quality process.

4.11. Data management and analysis

Data was checked, coded, cleaned and analyzed using SPSS version 27. Data analysis was made by principal investigator. Descriptive statistics & logistic regressions were computed. In descriptive statics table, graphs and charts were used to present the result. Before multivariable logistic regression multicollinearity test was checked by tolerance test and variance inflation factor (VIF) and goodness of fitness test was checked by Hosmer's and Lemeshow test. logistic regression was conducted to determine the association between intention of antenatal exercise and factors affecting. variables with P-Value <0.25 in binary logistic regression analysis was entered into multivariable logistic regression to assess association by controlling confounders. P-Value <0.05 was used for statically significance declaration with 95% CI, Odd Ratio was used to determine the effect of association between dependent variables and independent or factors.

4.12. Ethical consideration

The study was received its ethical clearance & approval letter from SPHMMC, school of public health ethical committee. Official letter of cooperation was written to selected public hospitals to get permission and support. Before starting the interview, verbal consent was taken from individual participant. Participants also kept confidential and information collected by this study was stored in a file, without their name, but code number assigned to it. It was not revealed to anyone except principal investigator.

4.13. Dissemination of result

The result of the study firstly it will be presented to Saint Paul hospital millennium medical college school of public health, department of epidemiology for partial fulfillment of requirements for the degree of Masters of public health in epidemiology. and submitted to Saint Paul hospital millennium medical college, different public hospitals, and responsible bodies. finally, possible efforts will be made to publish the result in national and international peer-reviewed journal

5. RESULTS

5.1. Socio-demographic characteristics

Among 452 pregnant women invited to the study 444 consented and participated giving a response rate of 98.2%. The participant's median age is 27 year and the mean age was 27.56 (SD $\pm$ 5.153) years with 19 and 40 being the minimum and maximum ages respectively. Most (34.2%) of the study participants were in the age group of 25 to 29 years (**Table 2**).

Table 2: Socio-demographic characteristics of pregnant women attending ANC at public hospitals, Addis Ababa, Ethiopia, 2024.

Variables	Categories	Frequency (%)
Women's Age (n=444)	15-19	12 (2.7%)
	20-24	127(28.6%)
	25-29	152(34.2%)
	30-34	100(22.5%)
	35 or above	53(11.9%)
Marital status of women (n=444)	Married	380 (85.6%)
	single	44 (9.9%)
	Others (a)	20 (4.5%)
The educational level of women (n=444)	Unable to read and write	30 (6.8%)
	Able to read and write	22 (5%)
	primary school (1-8)	126 (28.4%)
	High school (9-12)	110 (24.8%)
	College or above	156 (35.1%)
Husband education level (n=380)	Unable to read and write	18 (4.7%)
	Able to read and write	18 (4.7%)
	primary school (1-8)	83 (21.8%)
	High school (9-12)	119 (31.3%)
	College or above	142 (37.4%)
Women's Occupational Status (n=444)	Housewife	145 (32.7%)
	Private employee	64 (14.4%)
	Government employee	74 (16.7%)
	Self-employee	86 (19.4%)
	student	35 (7.9%)
	Others (b)	40 (9%)
Husband Occupation level (n=380)	Daily laborer	33 (8.7%)
	Private employee	75 (19.7%)
	Government employee	85 (22.4%)
	Self-employee	177 (46.6%)
	Others(c)	10 (2.6%)

Notes: Others (a) include: divorced, widowed, and cohabited. Others (b) include jobless, daily laborers, and beggars. Others (c) include: jobless, students, and beggars

5.2. Obstetrical characteristics

A little more than half (52%) of the participants were multigravida. Among the total respondents, more than half (65.5%) had no obstetrics complication during previous pregnancies and more than three-fourths (78.1%) of the study participants had no obstetrics and medical complications in the current pregnancy.

Table 3: Obstetric characteristics of pregnant mothers at public hospitals, Addis Ababa, Ethiopia, 2024.

Variables	Category	Frequency (%)
Gravidity (n=444)	Primigravida	212(47.7%)
	Multigravida	232(52.3%)
Gestational age(n=444)	2nd trimester	204(45.9%)
	3rd trimester	240(54.1%)
Pregnancy interval (n=232)	Two or < two years	32(13.4%)
	> two years	200(86.6%)
Number of ANC visit(n=444)	One	56(12.6%)
	Two to four	227(51.1%)
	Five or above	161(36.3%)
Pregnancy status of women(n=444)	Planned and wanted	341(76.8%)
	Unplanned but wanted	75(16.9%)
	Unplanned and unwanted	28(6.3%)
Parity (n=232)	Nulliparas	12(5.2%)
	Paras	220(94.8%)
Previous mode of delivery(n=220)	Spontaneous delivery	199(76.2%)
	Instrumental delivery	28(10.7%)
	Cesarian section delivery	34(12.3%)
Number of alive children at home(n=220)	None	13(5.9%)
	One child	111(50.5%)
	Two or more	106(43.6%)
Had abortion history(n=444)	Yes	101(22.7%)
	No	343(77.3%)

5.3. Awarenesses and Knowledge about antenatal physical exercise

Among the total respondents, 76.4% reported being aware of physical exercise during pregnancy. Almost all (96.5%) of those who had heard about physical exercise correctly identified walking as important during the antenatal period.

Regarding pregnant mothers' knowledge of prenatal physical exercise, the mean score of all respondents' knowledge about antenatal physical exercise was 11.88 ± 3.87 . The prevalence of respondents with adequate knowledge of prenatal physical exercise was 73.2%, with a (95% CI: 69%, 77%).

Concerning the benefits for mothers and their fetuses during pregnancy, 86.9% of all respondents correctly recognized that prenatal physical exercise is important for mothers, and 77% correctly identified its importance for fetuses. Of the study participants, 79.7% correctly answered that prenatal physical exercise can prevent pregnancy-related complications, and 66% correctly responded that it can prevent fetal distress during labor.

Among the total respondents, 57.7% correctly answered that antenatal physical exercise is important for reducing high blood pressure, and 49.5% correctly answered that it is important for reducing the risk of gestational diabetes mellitus during pregnancy.

On the other hand, 83.1% of the study participants were aware that antenatal physical exercise is unsafe in the supine position, and 63.7% knew that it is unsafe if experiencing vaginal bleeding during pregnancy.

Table 4: Awarenesses and Knowledge about prenatal physical exercise among pregnant mothers at public hospitals, Addis Ababa, Ethiopia, 2024.

Variables	Category	Frequency (%)
Have heard about antenatal physical exercise (n=444)	Yes	339 (76.4%)
	No	105 (23%)
Type of antenatal physical exercise heard (n=339)	walking	206 (60.67%)
	Breathing and relaxation	61 (18%)
	Pelvic floor exercise	40 (11.69%)
	Ankle and toe raising	20 (5.94%)
	Others (a)	13 (3.71%)
Had a physical exercise habit before pregnancy(n=444)	Yes	240 (54.1%)
	No	204 (45.9%)
Level of physical activity habit before pregnancy by self-evaluation (n=240)	low	27 (11.3%)
	Moderate	207 (86.3%)
	High	6 (2.5%)
Type of physical activity exercised before pregnancy(n=240)	walking slowly	117 (48.8%)
	swimming	68 (28.3)
	Walking quickly	124 (51.7%)
	Climbing step	59 (24.6%)
	Running slowly	25 (10.4%)
	Others (b)	41 (17.1%)

Note: Others(a) include (daily activity at home and childcare) and (b) include (cycling, gymnastics and other sports)

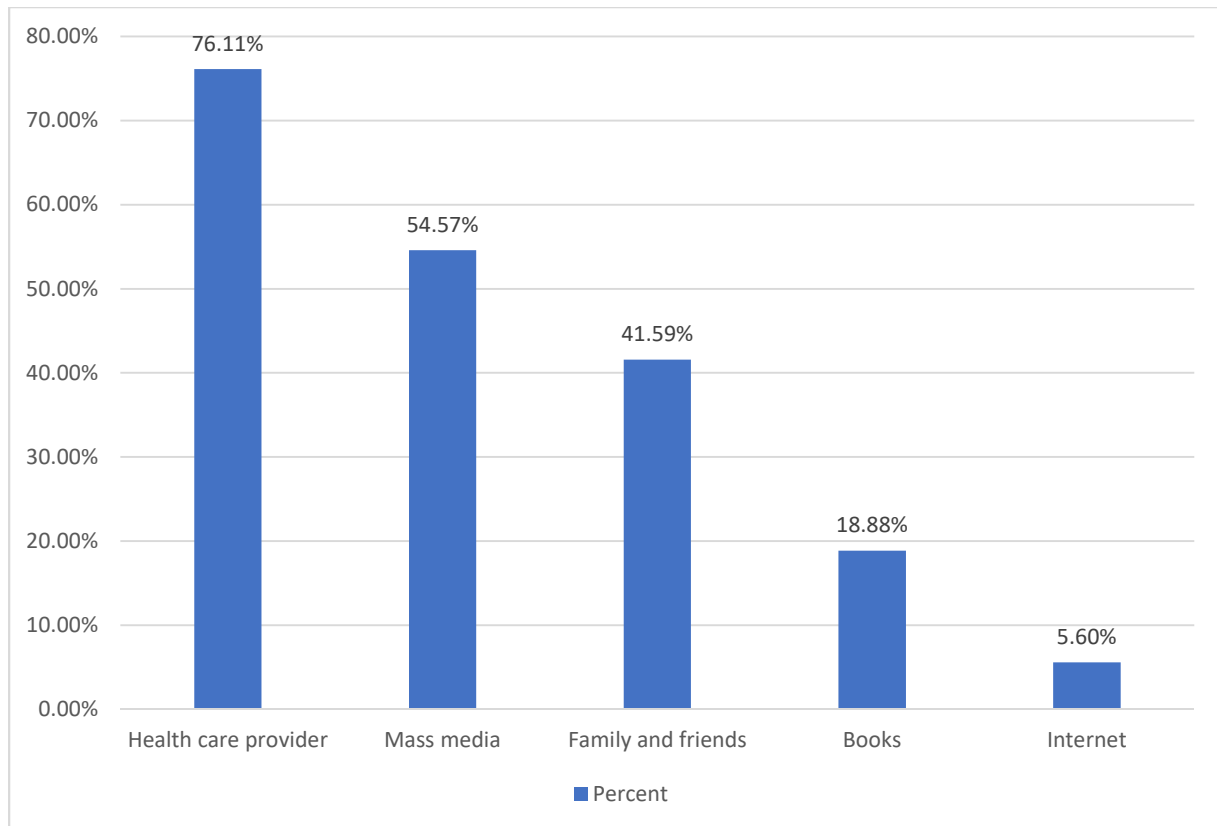


Figure 3: Source of information about prenatal physical exercise among pregnant mothers having ANC follow-up at public hospitals, Addis Ababa, Ethiopia, 2024 (n=339)

5.4. Attitude towards antenatal physical exercise

This study examined pregnant mothers' attitudes toward prenatal physical exercise during the prenatal period. While 86.7% agreed that physical exercise is essential during pregnancy, 63.7% felt it was not culturally appropriate.

Among all respondents, the mean score for attitudes toward antenatal physical exercise was 27.75 ± 5.534 , ranging from 8 to 40. The majority of respondents (73.4%), with a (95% CI: 69%, 78%), held favorable attitudes toward antenatal physical exercise.

Table 5: Attitude towards antenatal physical exercise among prenatal mothers at public hospitals, Addis Ababa, Ethiopia, 2024 (n=444)

Variables	Category	Frequency (%)
Physical exercise is essential during pregnancy	Strongly disagree	8 (1.8%)
	Disagree	15 (3.4%)
	Neutral	36 (8.1%)
	Agree	257 (57.9%)
	Strongly agree	128 (28.8%)
Physical exercise is likely during pregnancy	Strongly disagree	10 (2.3%)
	Disagree	23 (5.2%)
	Neutral	41 (9.2%)
	Agree	128 (28.8%)
	Strongly agree	242 (54.5%)
Antenatal exercise doesn't harm mother and fetus	Strongly disagree	32 (7.2%)
	Disagree	120 (27%)
	Neutral	70 (15.8%)
	Agree	133 (30%)
	Strongly agree	89 (20%)
Antenatal physical exercise will decrease pregnancy-related discomfort	Strongly disagree	16 (3.6%)
	Disagree	47 (10.6%)
	Neutral	92 (20.7%)
	Agree	187 (42.1%)
	Strongly agree	102 (23%)
Antenatal physical exercise will control weight and get back in shape	Strongly disagree	17 (3.8%)
	Disagree	95 (21.4%)
	Neutral	105 (23.6%)
	Agree	143 (32.2%)
	Strongly agree	84 (18.9%)
Antenatal physical exercise will rapid post-natal recovery	Strongly disagree	14 (3.2%)
	Disagree	55 (12.4%)
	Neutral	90 (20.3%)
	Agree	176 (39.5%)
	Strongly agree	109 (24.5%)
Pregnant women should perform exercise under the guidance of health care professionals	Strongly disagree	44 (9.9%)
	Disagree	95 (21.4%)
	Neutral	48 (10.8%)
	Agree	151 (34%)
	Strongly agree	106 (23.9%)
Antenatal physical exercise is suit for your culture	Strongly disagree	164 (36.9%)
	Disagree	127 (26.8%)
	Neutral	44 (9.9%)
	Agree	79 (17.8%)
	Strongly agree	30 (6.8%)

5.5. Barriers to antenatal physical exercise intention during pregnancy

Concerning to percentage of barriers to do antenatal physical exercise, nearly half (45.3%) of the total respondents had no adequate supporting facility and 48.4% had no safe supporting facility to do antenatal physical exercise. And 32.7% of this study participants had no enough time to do antenatal physical exercise.

Table 6: barriers to antenatal physical exercise intention among pregnant mothers at public hospitals, Addis Ababa, Ethiopia, 2024(n=444)

Variables	Category	Frequency (%)
Having adequate supporting facilities for physical exercise	Yes	243 (54.7%)
	No	201 (45.3%)
Having a safe supporting facility to do physical exercise	Yes	229 (51.6%)
	No	215 (48.4%)
Having good family/friend support during the current pregnancy	Yes	271 (61%)
	No	173 (49%)
Doing everything according to the plane	Yes	297 (66.9%)
	No	147 (31.3%)
often forgot to put things back in their proper place	Yes	184 (41.4%)
	No	260 (58.6%)
Having enough time to do antenatal exercise	Yes	299 (67.3%)
	No	145 (32.7%)
Having a workload at home	Yes	214 (48.2%)
	No	230 (51.8%)
Often tired during the current pregnancy	Yes	327 (73.4%)
	No	117 (16.6%)

5.6. Prevalence of intention towards antenatal physical exercise.

Regarding women's intentions to engage in antenatal physical exercise, the mean score among all respondents was found to be 13.28 ± 3.61 , ranging from 4 to 20 with a (95% CI: 12.95, 13.62). Overall, more than half (59.90%), with a (95% CI: 55%, 64%) intended to participate in antenatal physical exercise during pregnancy (**Figure 4**).

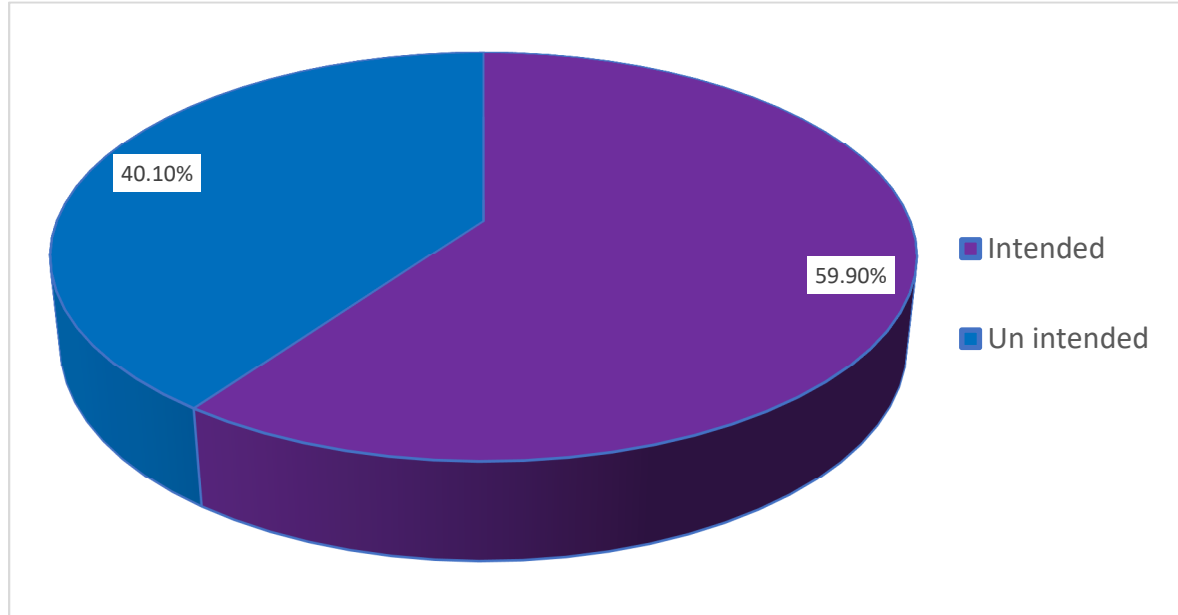


Figure 4: Prevalence of intention to do antenatal physical exercise Among pregnant mothers having ANC follow-up at public hospitals, Addis Ababa, Ethiopia(n=444).

5.7. Factors associated with intention to do antenatal physical exercise

Bi-variable logistic regression analysis was used to determine the relationship between each independent variable and the intention to engage in antenatal physical activity during pregnancy. In this analysis, women's age, attitude, knowledge, partner's education level, gestational age, number of antenatal care (ANC) visits, information sources (healthcare providers and mass media), access to facilities, family and friend support, available time, and previous physical exercise habits were considered as potential predictors for inclusion in a multivariate logistic regression model ($p\text{-value} < 0.25$).

Of these candidate variables, the following remained significantly associated with the intention to engage in physical activity during pregnancy in the multivariate logistic regression model ($p\text{-value} < 0.05$) (Table 8).

Participants who viewed prenatal physical activity favorably were 3.14 times more likely to intend to engage in antenatal physical exercise compared to those with an unfavorable attitude with AOR = 3.14, (95% CI: 1.35, 7.30) and P value of 0.008.

Those with adequate supporting facilities for antenatal physical exercise were 3.47 times more likely to intend to engage in it compared to those without adequate facilities with AOR = 3.47 (95% CI: 1.71, 7.02) and P value of 0.008. Conversely, those without enough time were 72% less likely to intend to engage in antenatal physical exercise compared to those with sufficient time with AOR=0.28 (95% CI: 0.13, 0.62) and P value of 0.001 respectively.

Similarly, respondents who obtained information about antenatal exercise from mass media were 2.86 times more likely to intend to engage in it compared to those who did not (AOR = 2.86 (95% CI: 1.48, 5.54) and P value of 0.005).

Furthermore, participants with previous physical exercise habits were 2.60 times more likely to intend to engage in antenatal physical exercise compared to those without such habits with AOR= 2.60 (95% CI: 1.28, 5.28) and P value of 0.001. Additionally, women with five or more ANC visits were 4.75 times more likely to intend to engage in it compared to those with only one ANC visit with AOR= 4.75 (95% CI: 1.28, 17.84) and P value of 0.021.

Table 7: Bivariate and multivariate examination of the variables linked to pregnant women's intention to engage in antenatal physical exercise throughout their pregnancy at public hospitals, Addis Ababa, Ethiopia, 2024.

Variables	Level of intention		COR (95% C.I)	AOR (95% C.I)
	Intended	Un intended		
Women knowledge of antenatal exercise				
Inadequate	42(35.3%)	77(64.7%)	1	1
Adequate	224(68.9%)	101(31.1%)	4.07(2.61, 6.33)	1.14(0.48, 2.69)
Women attitude of antenatal exercise				
Unfavorable	35(29.7%)	83(70.3%)	1	1
Favorable	231(70.9%)	95(29.1%)	5.77(3.63, 9.15)	3.14(1.35, 7.30) **
Counseled by a healthcare provider about antenatal exercise				
No	43(53.4%)	38(46.6%)	1	1
Yes	189(73.3%)	69(26.7%)	2.42(1.22,3.43)	1.61(0.75, 3.46)
Having an adequate support facility to do antenatal exercise				
No	73(36.3%)	128(63.7%)	1	1
Yes	193(79.4%)	50(20.6%)	6.77(4.43,10.3)	3.47(1.71, 7.02) **
Have good family and friend support to do antenatal exercise				
No	77(44.5%)	96(55.5%)	1	1
Yes	189(69.7%)	82(30.3%)	2.87(1.93,4.27)	1.26(0.61-2.60)
Having enough time for antenatal exercise				
No	44(30.3%)	101(69.7%)	0.15 (0.1, 0.23)	0.28(0.13, 0.62) **
Yes	222(74.2%)	77(25.8%)	1	1
had exercise habit before pregnancy				
No	88(43.1%)	116(56.9%)	1	1
Yes	178(74.2%)	62(25.8%)	3.78(2.54, 5.65)	2.6(1.28, 5.28) **
Mass media exposure to antenatal exercise				
No	91(57.2%)	68(42.8%)	1	1
Yes	143(79.4%)	37(20.6%)	2.89(1.79, 4.66)	2.86(1.33, 5.27) **
Women's level of education				
Unable to read and write	11(36.7%)	19(63.3%)	1	1
Able to read and write	9(40.9%)	13(59.1%)	1.20(0.39, 3.70)	1.65(0.18, 14.90)
Primary school (1-8)	63(50%)	63(50%)	1.73(0.76, 3.92)	1.69(0.32, 8.89)
High school (9-12)	68(61.8%)	42(38.2%)	2.80(1.03, 2.93)	2.00(0.35, 11.35)
College or above	115(73.7%)	41(26.3%)	4.9(2.13,12.98)	2.07(0.36, 12.04)
Number of ANC visits				
One	21(30.9%)	47(69.1%)	1	1
Two-four	76(45.2%)	92(54.8%)	1.85(1.02, 3.36)	0.63(0.20, 2.05)
Five or more	169(81.3%)	39(18.7%)	9.7(5.21, 18.05)	4.75(1.26, 17.84) *

* Statistically significant at $P < 0.05$, **statistically significant at $p < 0.01$

Note: COR (Crud odd ratio), AOR (Adjusted odd ratio), C.I(Confidence interval)

6. DISCUSSION

Evidence showing that those who engage in greater or equal to 60% intention to do physical exercise were intended (care out) their intention(63). This study found that from 444 women who have ANC follow-up, 59.9% of participants intended to do antenatal physical exercise, and the participant's mean intention to do antenatal physical exercise was 13.8.

This study's finding is Higher than research conducted in Ethiopia, Debre Markos where the mean intention was (3.8) (27). The majority of study participants with a college degree or higher education level may have contributed to the higher degree of intention observed. It is possible that more educated women are more likely to be aware of or have easier access to information about physical activity during pregnancy(65). This discrepancy might be attributed to the fact that all participants in this study had a gestational age greater than 12 weeks, as well as potential differences in media coverage.

This study was also higher than a comparative study done between Australians and Chinese the mean intention was (5.7) and (4.9) respectively(52). This might be due to cultural disparities may account for this discrepancy. Traditional Chinese culture, for instance, often views pregnant women as particularly vulnerable, and in need of rest and safety(52). which could influence attitudes toward physical activity during pregnancy. The higher level of intention might be attributed to the inclusion of all pregnant women with gestational ages exceeding 12 weeks in this study, whereas the other study considered only those between 18 and 26 weeks.

This study found a significantly greater intention for antenatal physical exercise among women with favorable attitudes toward it. This result aligns with findings from research conducted in the United Kingdom, Denmark, Pennsylvania, Australia, China, and Ethiopia (4,27,28,52,55,60). This might be because pregnant mothers have confidence in their capacity to engage in physical activity throughout the duration of their pregnancy(66). If a pregnant woman thinks exercising is a manageable task, she can consider it a pleasurable experience (28).

The intention to engage in antenatal physical exercise was significantly higher among pregnant women with adequate access to exercise facilities. This finding aligns with a systematic review conducted in South Africa and Pakistan, which highlighted the importance of factors such as accessibility to safe spaces, gyms, and fitness centers, as well as affordability, for prenatal exercise (10). A pregnant woman may feel more in control of her exercise behavior when she believes sufficient resources and opportunities are available and fewer obstacles are anticipated. Additionally, the intention to engage in antenatal physical exercise was significantly higher among participants who obtained information about antenatal physical exercise from mass media, had five or more antenatal care (ANC) visits, and had a history of physical exercise before pregnancy. These findings align with another study conducted in South Africa, which reported that 70.2% of participants used radio, television, and other media to access information about antenatal exercise during pregnancy(59). Reduced physical activity during pregnancy is often attributed to a lack of understanding or information about antenatal exercise (67). An alternative explanation could be that intentions and/or actual behaviors are directly and causally influenced by past behavior (28). With more ANC follow-up visits, healthcare professionals can provide essential information and opportunities to discuss strategies for overcoming barriers to exercise during pregnancy, such as time constraints, fatigue, and physical limitations (25). Conversely, participants in this study who lacked sufficient time for antenatal physical exercise were 72% less likely to intend to exercise compared to those with ample time. This finding aligns with a comparative study of Australian and Chinese pregnant women, which demonstrated a negative association between perceived lack of time and intention to engage in antenatal physical exercise (52). This may show that lack of time is a barrier to willingness for antenatal physical exercise(52).

7. STRENGTHS AND LIMITATIONS OF THE STUDY

7.1. Strength of the study

- This study explored variables that were not examined in previous research.
- To our knowledge, this is the only study conducted in Addis Ababa that attempted to address the limitations of research conducted in Debre Markos, northern Ethiopia.

7.2. Limitation of the study

- A temporal relationship between exposure and outcome is not seen in this study because of its cross-sectional design.
- This study included only pregnant mothers receiving ANC follow-ups at public health institutions, excluding those from private facilities. This limitation may affect the generalizability or representativeness of the findings.

8. CONCLUSION AND RECOMMENDATION OF THE STUDY

8.1. Conclusion

- On which results is based this conclusion: media has positive influence on the intention of antenatal exercise. High proportion (over 75%) of respondents receiving information from mass media about prenatal exercise expressed intention to exercise.
- The number of antenatal care (ANC) visits, media exposure, access to facilities, women's attitudes, time constraints, and previous exercise habits significantly influenced the intention to engage in antenatal physical exercise

8.2. Recommendation

Based on the study's findings, the following recommendations are made for various stakeholders:

Pregnant Women

- Actively seek information about the benefits, risks, contraindications, and types of antenatal physical exercise from accessible and affordable sources.

Healthcare Providers and Health Facilities

- Implement health education programs incorporating prenatal physical activity to enhance exercise behaviors among pregnant women receiving prenatal care.

Public Health Professionals

- Promote comprehensive interventions to modify pregnant women's prenatal exercise behaviors by improving access to and affordability of mass media, supporting facilities, and addressing women's attitudes, exercise experiences, and health-seeking behaviors.
- Collaborate with other sectors to disseminate information and promote activities related to antenatal physical exercise within organizations where women are employed.

Policymakers

- Develop strategies to establish clinical practice guidelines for antenatal physical exercise and implement health education programs providing accessible and affordable information about prenatal exercise to all pregnant women.

Academicians and Future Researchers

- Educate health care students and maternity care professionals about the benefits and risks of physical activity during pregnancy.
- Utilize this study as a foundation for large-scale research encompassing private health institutions to improve generalizability.
- Investigate the applicability of various exercise types within the local context.

Overall

This study highlights the need for comprehensive strategies to promote antenatal physical exercise and address the factors influencing women's exercise behaviors.

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10. ANNEXES

ANNEX I– Information Sheet

St. Paul’s Hospital Millennium Medical College

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF EPIDEMIOLOGY

Here, I undersigned, SPHMMC, Department of public health in epidemiology, currently I will be undertaking research on a topic prevalence of intention and practice of antenatal physical exercise and associated factors among pregnant women attending ANC at public hospital, Addis Ababa, Ethiopia. For this study, you will be selected as a participant and before getting your permission or consent of your participation, you need to know all necessary information related to the study. this information will be detailed as;

Objective: To assess prevalence of intention and practice of antenatal physical exercise and associated factors among pregnant women attending ANC at public hospitals, Addis Ababa, Ethiopia.

Significance of the study: The result of this research will be an input for concerned bodies for decision making process around pregnant women willingness towards antenatal physical activity. And it serves as an input for health education program to different organizations and the community being aware of the importance of physical activity and how to avoid antenatal exercise barriers during pregnancy,

To be included Participants: All pregnant women who will be attending antenatal care and volunteer to participate in the study.

Confidentiality: All information will be given by participant kept the secret and only revealed for researcher. And assigned by code instead of register by name on the question sheet.

Risks and Benefits of the study: This study will be carried out by interviewer administered questionnaire. When you participating in the study which does not bear any psychological or physical trauma. Furthermore, when you do not know the response of the question will not be

forced. By participating in the study will not get payment. Giving information for asked question used as a great input in efforts to improve health of pregnant and postnatal women.

Principal investigator name: Gedefaye Tesfahun Date: _____

Signature_____ Address of PI: Mobile: **+251915628760**

E- Mail: gedefayetesfahun@gmail.com

Name of data collectors _____Date _____ Signature _____

Name of supervisor_____Date _____ Signature _____

ANNEXES II: Consent Form

St. Paul's Hospital Millennium Medical College
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF EPIDEMIOLOGY

Good morning/afternoon. My name is _____ and I am _____. I am studying prevalence of intention and practice of antenatal physical exercise and associated factors among pregnant women who are attending antenatal care on behalf of **Gedefaye Tesfahun**, who is a master's student at SPHMMC, school of public health, department of public health in epidemiology. I would like you to respond questions only if you wish. I assured that confidentiality of the information you will give. Your name will be not written on the questionnaire to ensure your confidentiality. Make sure that, no harm because of involved in this study. You have full right to be totally or partially decline the interview. I need your honest answer for interview questions you want to respond. Because this would help us to give genuine conclusions and recommendations that would helpful for stakeholders who concerned for improving maternal health service facilities.

Consent

I have fully understood its contents and I have agreed to participate in this research project.

Yes-----

No-----

Thank you for giving us your consent.

NAME OF DATA COLLECTER----- SIGN-----DATE-----

Annex III: English version Questionnaire

Instruction: choose the answer for questions that no need direct answer. And write the answer in the space provided for direct answer.

Note: Note: Inclusion criteria: If the woman responds “Yes” to any of the following questions she is not eligible to participate in the study, go to the next candidates.

s.no.	Question	Option
1	Is your gestational age less than 12 weeks completed (less than 3 months complete)?	1. Yes 2. No
2	Have you been interviewed by me on this issue before?	1. Yes 2. No
3	Have you been medically advised to minimize physical exercise by health care providers?	1. Yes 2. No

Questionnaire ID. _____

Part 1. Socio-demographic characteristics

s.no.	Question	Option
101	Age	_____
102	Current marital status	1. Married 2. Divorced 3. Widowed 4. Single 5. Cohabited
103	Your level of education	1. Unable to read and write 2. Able to read and write 3. primary school (1-8) 4. High school (9-12) 5. College or above
104	What is your husband's level of education?	1. Unable to read and write 2. Able to read and write 3. primary school (1-8)

		4. High school (9-12) 5. College or above	
105	Occupational status	1. House wife 2. Daily laborer 3. private-employ 4. Government worker 5. Self-employ 6. Student 7. Others specify.....	
106	What is your husband's occupation?	1. Daily laborer 2. private-employ 3. Government worker 4. Self-employ 5. Student 6. other specify-----	

Part 2: Questions related to obstetric History

201	How many times in total did you pregnant?	1. One 2. Two and more	Skip to
202	How long from previous pregnancy to last menstrual period of present pregnancy in month/year	_____	
203	What is your gestational age status in completed weeks?	_____	
204	Status of pregnancy?	1. Planned and wanted (intended) 2. Unplanned but wanted (mistimed) 3. Unplanned and unwanted	
205	How many antenatal care visits did you have in the current pregnancy including	_____	

	today in number?		
206	Have you ever had a history of miscarriage?	1. Yes 2. No	
207	How many times in total did you give birth?	_____	If none skip to Q 210
208	If the answer for Q 207 is one and more, how many number of alive children do you have in number at home?	_____	
209	If the answer for Q 207 is one and more, what was the previous mode of delivery? (more than one answer is possible).	1. Spontaneous vaginal delivery 2. Instrument-assisted vaginal delivery 3. CEsarian section delivery	
210	If the answer to Q 201 is two and more, which obstetric complications happened in the previous pregnancy? (more than one answer is possible).	1. None 2. Preterm delivery 3. Vaginal bleeding 4. Premature rupture of membrane 5. Gestational diabetes mellitus 6. Gestational hypertension 7. fetal macrosomia 8. Others specify_____	
211	Which obstetrics or medical complications happened in the current pregnancy? (more than one answer is possible).	1. None 2. Gestational diabetes mellitus 3. Chronic diabetes mellitus 4. Gestational hypertension	

		5. Chronic Hypertension 1. Anemia 2. Others specify_____	
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Part 3: Awareness and knowledge about antenatal physical exercise

1.1. A question related to access of information about antenatal physical exercise

S. no	Questions	Alternative responses	Skip to
301	Have you ever heard about antenatal physical exercises?	1. Yes 2. No	If no skip to 304
302	If your answer to Q301 is yes, where did you learn (get the information) about it? (possibly more than one answer).	1. Healthcare provider 2. Mass media 3. Family or friend 4. Books 5. Internet (social media, google) 6. Others specify.....	
303	If the answer to Q301 is yes, which type of antenatal physical exercises are heard? (possibly more than one answer).	1. Walking 2. Dancing 3. Relaxation /Breathing 4. Pelvic Floor Exercises 5. Swimming 6. Ankle and toe exercise 7. Others specify.....	
304	Have you ever had a physical exercise habit before pregnancy?	1. Yes 2. No	If no skip to 307
305	How do you rate your level of physical activity before pregnancy?	1. Low 2. Moderate 3. High	
306	Which one is the preferred mode of physical exercise before pregnancy? (It is possible to give more than one answer)	1. Walking slowly	
		2. Dancing	
		3. Prenatal exercise class	
		4. Swimming	

		5. Walking quickly	
		6. Climb hill	
		7. Running slowly	
		8. Running quickly	
		9. Others specify	

1.2. Questions related to knowledge about the benefits and contraindications of antenatal physical exercise.

Instruction: The following questions are related to the knowledge of antenatal physical exercise.

Respond “yes,” “no,” or “Uncertain” to the benefits of physical exercise during pregnancy.

S. no	Questions	Alternative answers
A. Questions related to the benefits of physical exercise during pregnancy for mothers and fetus		
307	Physical exercise during pregnancy is important for mothers	1. Yes 2. No 3. Uncertain
308	Physical exercise during pregnancy can prevent pregnancy-related complications.	1. Yes 2. No 3. Uncertain
309	Physical exercise during pregnancy can reduce fatigue and stress.	1. Yes 2. No 3. Uncertain
310	Physical exercise during pregnancy can reduce depression.	1. Yes 2. No 3. Uncertain
311	Physical exercise during pregnancy can reduce the risk of high blood pressure.	1. Yes 2. No 3. Uncertain

312	Physical exercise during pregnancy can reduce the risk of diabetes mellitus.	1. Yes 2. No 3. Uncertain
313	Physical exercise during pregnancy can reduce the chance of cesarean sections.	1. Yes 2. No 3. Uncertain
314	Physical exercise during pregnancy can help cope with labor and delivery pain	1. Yes 2. No 3. Uncertain
315	Physical exercise during pregnancy is important to the fetus.	1. Yes 2. No 3. Uncertain
316	Physical exercise during pregnancy reduces the risk of preterm birth.	1. Yes 2. No 3. Uncertain
317	Physical exercise during pregnancy reduces fetal distress during labor.	1. Yes 2. No 3. Uncertain
318	Physical exercise during pregnancy reduces risk of fetal macrosomia.	1. Yes 2. No 3. Uncertain
B. Questions related to contraindications of physical exercise during pregnancy		
319	Physical exercise in supine position is a contraindication during pregnancy.	1. Yes 2. No 3. Uncertain
320	Vaginal bleeding during pregnancy is a contraindication for physical exercise.	1. Yes 2. No 3. Uncertain
321	Severe anemia during pregnancy is a contraindication for	1. Yes

	physical exercise.	2. No 3. Uncertain
322	Uncontrolled type 1 DM during pregnancy is a contraindication for physical exercise.	1. Yes 2. No 3. Uncertain
323	Uncontrolled hypertension during pregnancy is a contraindication for physical exercise.	1. Yes 2. No 3. Uncertain
324	Severe headache during pregnancy is a contraindication for physical exercise.	1. Yes 2. No 3. Uncertain
325	If premature rupture of membrane or/and labor is a contraindication for physical exercise.	1. Yes 2. No 3. Uncertain

Part 4: Questions related to maternal attitude towards antenatal physical exercise.

s.no	Questions	alternative
401	Do you believe physical exercise is essential during pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
402	Do you believe physical exercises are likely during pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
403	Do you believe antenatal exercise doesn't harm you or your baby?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree

		5. Strongly agree
404	Do you believe antenatal physical exercise will decrease pregnancy-related discomfort?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
405	Do you believe antenatal physical exercise will help you to control weight and get back in shape?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
406	Do you think antenatal physical exercise will help rapid post-natal recovery?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
407	Do you believe pregnant women should perform exercise under the guidance of health care professionals?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
408	Do you believe antenatal exercise suits your culture?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

Part 5: Barriers to intention to do antenatal physical exercise during pregnancy

501	Do you have access to and offer facilities for antenatal exercise?	1. Yes
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		2. No
502	Do you have a comfortable environment to do antenatal exercise?	1. Yes 2. No
503	Did you have a good family/friend support during this pregnancy?	1. Yes 2. No
504	Did you do everything according to the plan?	1. Yes 2. No
505	Did you have often forgot to put things back in their proper place?	1. yes 2. No
506	Did you have enough time to do antenatal exercise?	1. yes 2. No
507	Did you have a workload at home?	1. yes 2. No
508	Did you have often felt tired during this pregnancy?	1. Yes 2. No

Part 6: measure of intention to do physical exercise during the antenatal period

Note: brisk Walking, Relaxation and breathing exercises, Ankle and toe raising, Pelvic floor exercise, swimming, stationery cycling, dancing and etc.) are recommended types of antenatal physical exercises during antenatal period.

s. no	Questions	Alternative answer
601	Have you intended to do regular programmed antenatal physical exercise (at least 30 minutes every day or 3 days/150 minutes per week) in the current pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
602	Have you decided to do antenatal physical exercise (at least 30 minutes every day or 3 days/150 minutes per week) in your current pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral

		4. Agree 5. Strongly agree
603	Will you try to do antenatal physical exercise within the next month (for at least 30 minutes every day or 3 days/150 minutes per week) during your current pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
604	Would you like to do antenatal physical exercise (at least 30 minutes every day or 3 days/150 minutes per week) by program during your current pregnancy?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
Thank you		

የአማራጭ መጠይቅ
የቅዱስጳውሎስ ሐስፒታል ሚሊኒየም ሜዲካል ኮሌጅ
የማህረሰብ ጤና ሳይንስ ትምህርት ቤት
እፒዲሞሎጂ ትምህርት ክፍል

ይህ መጠይቅ የተዘጋጀው በኢትዮጵያ አዲስ አበባ ከተማ በሚገኙ የማሕረሰብ ሐስፒታሎች የቅድመ ወሊድ እንክብካቤ የሚከታተሉ የነፍስ ጡር እናቶች ለለቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ የማድረግ ያላቸውን የዓላማ እና ተያያዥ ምክንያቶችን የዳሰሳ ጥናት ለማድረግ ነው ። ለዚህ ጥናት እንደ ተሳታፊነት ተመርጠዋል እና የእርስዎን ተሳትፎ ፈቃድ ወይም ስምምነት ከማግኘት በፊት፣ ከጥናቱ ጋር በተገናኘ ማወቅ ያለብዎት ሁሉም አስፈላጊ መረጃዎች እንደሚከተለው ይዘረዘራሉ፤

ዓላማ፡ በአዲስ አበባ፣ ኢትዮጵያ ውስጥ በሚገኙ የማሕረሰብ ሐስፒታሎች የቅድመ ወሊድ እንክብካቤ የሚከታተሉ የነፍስ ጡር እናቶች ለለቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ የማድረግ ያላቸውን የዓላማ እና ተያያዥ ምክንያቶችን የዳሰሳ ጥናት ለማድረግ ነው ።

የጥናቱ አስፈላጊነት ፡- የምርምር ግኝቱ በነፍስ ጡር እናቶች ላይ ለቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ዝግጁነት በውሳኔ አሰጣጥ ሂደት ለሚመለከተው ፖሊሲ አውጪዎች ግብአት ሊሆን ይችላል። እንዲሁም ህብረተሰቡ የአካል ብቃት እንቅስቃሴን አስፈላጊነት እንዲገነዘብ እና በእርግጠኛ ወቅት የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴን ችግሮችን እንዴት ማስወገድ እንደሚቻል በጤና ትምህርት መርሃ ግብሩ ውስጥ በተለያዩ አደረጃጀቶች ግብአት ሆኖ ያገለግላል።

የሚካተቱ ተሳታፊዎች፡- ሁሉም ነፍስ ጡር እናቶች በቅድመ ወሊድ ክትትል የሚያድርጉ እና በጥናቱ ላይ ለመሳተፍ ፈቃደኛ የሆኑ።

ሚስጥራዊነት፡- ሁሉም የሚሰጡት መረጃ በሚስጥር ይጠበቃል እና ለማንኛውም ሶስተኛ ወገን ተደራሽ አይሆንም። ማንነት እንዳይታወቅ ስም በጥያቄ ወረቀቱ ላይ አይመዘገብም።

የጥናቱ አደጋዎች እና ጥቅሞች፡- ጥናቱ የሚካሄደው በቃለ መጠይቅ ጠያቂ አዴራጊ መጠይቅ ነው። አስራሩ ምንም አይነት አካላዊ እና ስነልቦናዊ ጉዳቶችን አያሥክትም። በተጨማሪም ለማያውቁት መረጃ ምላሽ ለመስጠት አይገደዱም። በጥናቱ ላይ ለመሳተፍ ምንም አይነት ክፍያ የለም ነገር ግን በጥናቱ ላይ መሳተፍ እና ለጥያቄዎች መረጃዎን መስጠት ነፍሰጡር እና የወለዱ እናቶች ጤናን ለማሻሻል ለሚደረገው ጥረት ትልቅ አስተዋፅኦ ይኖረዋል።

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ኢ-ሜይል : gedefayetesfahun@gmail.com

የመረጃ ሰብሳቢ ስም _____ ቀን _____ ፊርማ _____

የተቆጣጣሪ ስም _____ ቀን _____ ፊርማ _____

የስምምነት ቅጽ

የቅዱስጳውሎስ ሐስፒታል ሚሊኒየም ሜዲካል ኮሌጅ

የማህረሰብ ጤና ሳይንስ ትምህርት ቤት

እፒዳሞሎጂ ትምህርት ክፍል

እንደምን አደሩ/አፈፈዱ :: ስሜ _____ እባላለሁ የምሰራው በ _____ ነው

የቅድመ ወሊድ ክትትል በሚከታተሉ ነፍስ ጡር እናቶች ሥለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ የመሥራት አላማ ና ተያያዥ ምክንያቶች በተመለከተ ጥናት በቅዱስጳውሎስ ሐስፒታል ሚሊኒየም ሜዲካል ኮሌጅ የድህረ ምረቃ ተማሪ በሆነው በገደፋዬ ተስፋሁን ስም እየሠራን ነው። እና ከፈለጋችሁ ብቻ ምላሽ እንድትሰጡኝ እፈልጋለሁ። ያሚያቀረቡት መረጃ በሚስጥር እንደሚጠበቅ አረጋግጣለሁ። ሚስጥራዊነትዎን ለማረጋገጥ ስምዎ በመጠይቁ ላይ አይጻፍም። እርስዎ በዚህ ጥናት ውስጥ ስለሚሳተፉ ምንም አይነት ጉዳት እንደሌለ ያረጋግጡ። በቃለ መጠይቁ ሊይ በክፍልዎ ይሁን ሙሉ በሙሉ አለመሳተፍ የሚችሉ ሲሆን ቃለ መጠይቁ የሚወስደው ጊዜ 20 ደቂቃ ነው። በቃለ መጠይቁ ለመሳተፍ ፈቃደኛ ከሆኑ የሚሰጧቸው ምላሾች ለኢትዮጵያ የጤና ጥበቃ ሚኒስቴር እና የጤና አገልግልት መስጫዎች ማሻሻያ የሚግዙ ትክክለኛ ዴሞክራሲያዊና አስተያየቶች ሊይ ለመድረስ አስፈላጊ በመሆኑ እባክዎ መመለስ ለሚፈለጋቸው ጥያቄዎች ትክክለኛ ምላሾችዎን ይስጡን።

የመጠይቁን ሙሉ ይዘቶች ተገንገዬ በዚህ የምርምር ጥናት ፕሮጀክት ሊይ ለመሳተፍ ፍቃዳኛ ሆኛለሁ።

አዎ-----

አይ-----

ፍቃደኛ ስለሆኑ እናመሰግናለን።

የመረጃ ሰብሳቢው ስም -

ምልክት - - -

ቀን --- -----

መጠይቅ

መመሪያ: ከመረጡት መልስ ጋር ትይዩ የተሰጠውን የኮድ ቁጥር አክብብ ቀጥተኛ መልስ ለሚሰጧቸው ጥያቄዎች፣ ቀጥተኛ መልስ ለማይሰጣቸው መልሱን በተዘጋጀው ቦታ ላይ ይፃፉ።

ማስታወሻ: የማካተት መስፈርቱ ለሚከተሉት ጥያቄዎች መልሱ "አዎ" ከሆነ መጠይቁን ያቁሙ እና ወደ ቀጣይ እጩዎች ይሂዱ።

1	እርግዝናዎ 12 ሳምንት(3 ወር አልሞላውም)?	1. አዎ 2. ሞልቶል
2	በዚህ ጉዳይ ላይ ከተወሰነ ጊዜ በፊት ከእኔ ጋር ቃለ-መጠይቅ አድርገው ያውቃሉ?	1. አዎ 2. አላደረግሁም
3	በጤና ባለሙያዎች የአካል ብቃት እንቅስቃሴዎን እንዲቀንሱ ተመክረዋል?	1. አዎ 2. አልተመክርሁም

ኮድ _____

ክፍል 1 ስለ ማህበራዊ ስነ ህዝባዊ ባህሪያት ለተመለከቱ ጥያቄዎች

ተ/ቁ	ጥያቄ	አማራጭ
101	እድሜዎ ስንት ነው?	_____
102	የጋብቻ ሁኔታዎ ምንድን ነው?	1. ያገባች 2. የፈታች 3. ባልዋ የሞተባት 4. ያላገባች 5. አብራ የምትኖር(ሳይጋቡ)
103	የእርስዎ የትምህርት ደረጃ ምንድን ነው?	1. ማንበብ እና መጻፍ አልችልም 2. ማንበብ እና መጻፍ የምትችል 3. አንደኛ ደረጃ ትምህርት ያጠናቀቀች 4. ሁለተኛ ደረጃ ትምህርት ያጠናቀቀች

		5. ኮሌጅ ወይም ከዚያ በላይ	
104	የባለቤትነት የትምህርት ደረጃ ምንድን ነው?	1. ማንበብ እና መጻፍ አይችልም 2. ማንበብ እና መጻፍ የሚችል 3. የመጀመሪያ ደረጃ ትምህርት 4. ሁለተኛ ደረጃ ትምህርት ቤት 5. ኮሌጅ ወይም ከዚያ በላይ	
105	ስራዎ ምንድን ነው?	1. የቤት እመቤት 2. የቀን ሰራተኛ 3. የግል ተቀጣሪ 4. የመንግስት ሰራተኛ 5. ተማሪ 6. ሌላ	
106	የባለቤትነት ስራ ምንድን ነው?	1. የቀን ሰራተኛ 2. የግል ተቀጣሪ 3. የመንግስት ሰራተኛ 4. ተማሪ 5. ሌላ ይግለጹ -----	

ክፍል 2 ከእርግዝና እና ከእናቶች ጋር የተዛመዱ ባህሪዎች፡፡

ተ.ቁ.ጥ	ባጠቃላይ በቁጥር ስንት ጊዜ አርግዘዋል?	1. አንድ 2. ሁለት እና ከዚያ በላይ	ዝለል
201			
202	ለ ጥያቄ ቁጥር 201 መልሱ ሁለት እና ከዚያ በላይ ከሆነ ከዚህ በፊት ባለውና በአሁኑ እርግዝና መካከል ምን ያህል ልዩነት አለው በወር ስንት ነው	-----	

203	እርግዝናዎ ስንት ሳምንት ሞልቶታል በቁጥር?	.....	
204	የእርግዝናዎ ሁኔታ ምንድን ነው?	1. የታቀደ የሚፈለግ 2. ያልታቀደ የሚፈለግ 3. ያልታቀደ የማይፈለግ	
205	የአሁኑን ጨምሮ ስንት ጊዜ የቅድመ ወሊድ ክትትል አድርገዋል በቁጥር	.....	
206	ወረጃ አጋጥሞት ያውቃል?	1. አዎ 2. አያውቅም	
207	ስንት ጊዜ ወልደዋል በቁጥር?	1. ምንም 2. አንድ እና ከዚያ በላይ	መልሱ ምንም ከሆነ ወደ 210 ዝለል
208	እቤት ውስጥ ስንት ልጆች አለዎት በቁጥር?	.....	
209	ለ ጥያቄ ቁጥር 207 መልሱ አንድ እና ከዚያ በላይ ከሆነ በምን ነው የወለዱት? (ከአንድ በላይ መልስ መስጠት ይችላሉ)?	1. በምጥ 2. በምጥ ና በመሳሪያ በመታገዝ 3. በ ቀዶጥገና	
210	ለ ጥያቄ ቁጥር 201 መልሱ ሁለት እና ከዚያ በላይ ከሆነ ከዚህ በፊት ባለው እርግዝና ወቅት ከሚከተሉት ውስጥ የትኛው/ቹ የማህፀን ህክምና አዳጋወች ተከስቶብዎታል?(ከአንድ በላይ መልስ መስጠት ይችላሉ)?	1. ምንም 2. ቀኑ ሳይደርስ መውለድ 3. በማህፀን ደም መፍሰስ 4. የንሽርት ውሃ ያለጊዜው መፍሰስ 5. በርግዝና የመጣ የስኩአር ህመም 6. በርግዝና የመጣ ግፊት	

		7. የፅንሱ ከብደት ክልክ በላይ መጨመር 8. ሌላ ካለ ይጥቀሱ.....	
211	በዚህ የርግዝና ወቅት የትኛው/ቹ የማህፀን እና የውስጥ ደዌ ህክምና አዳጋወች ተከስቶብዎታል? (ከአንድ በላይ መልስ መስጠት ይችላሉ)?	1. ምንም 2. በርግዝና የመጣ የስኩኦር ህመም 3. ከእርግዝና በፊት የነበረ የስኩር ህመም 4. በርግዝና የመጣ ገፊት 5. ከእርግዝና በፊት የነበረ ግፊት መጨመር 6. ደም ማነስ 7. ሌላ ካለ ይጥቀሱ.....	

ጥያቄ ክፍል 3: ነፍሰጡር እናቶች ስለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ያላቸውን ግንዛቤ እና እውቀት የተመለከቱ ጥያቄዎች

1.1. ነፍሰጡር እናቶች ስለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ያላቸውን ግንዛቤ የተመለከቱ ጥያቄዎች

ተ/ቁ	ጥያቄ	አማራጭ መልሶች	ይለፉ
301	ስለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴዎች ሰምተው ያውቃሉ?	1. አዎ 2. አላውቅም	2 ከሆነ ወደ ጥ.304 ይለፉ
302	ለጥ.301 መልስዎ አዎ ከሆነ ስለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴዎቹ ከየት ነው የተማሩት (መረጃውን ያገኙት)? (ከአንድ በላይ መልስ መስጠት ይችላሉ)?	1. ከጤና ባለሙያዎች 2. ከቤተሰብ ወይም ጓደኛ 3. ከመገናኛ ብዙሀን 4. ከኢንተረኔት(ከማህበራዊ መገናኛ ወይም ጎግል) 5. ሌላ	
303	ለጥ.301 መልስዎ አዎ ከሆነ ከሚከተሉት ውስጥ የትኞቹን	1. መራመድ/ፈጣን የእገርጉዞ ማድረግ	

	የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴዎች ያውቃሉ ወይም ስምተዋል?(ከአንድ በላይ መልስ መስጠት ይችላሉ)	2. ሳይክል መንዳት 3. የማፍታታት/ትንፋሽ መውሰድእንቅስቃሴ 4. የመቃጠር) እንቅስቃሴ 5. የውሃ ዋና 6. የጉልበትና እግር ጣቶች እንቅስቃሴ	
304	ከእርግዝና በፊት የአካል ብቃት እንቅስቃሴ ይሰሩ ነበር?	1. አዎ 2. የለም	አይደለም ከሆነ ወደ307 ይዘል::
305	ከእርግዝና በፊት ያለው የአካል ብቃት እንቅስቃሴዎ ደረጃ በ ርስዎ ግምት ምን ያህል ነው ይላሉ?	1. ዝቅተኛ 2. መካከለኛ 3. ከፍተኛ	
306	ለጥ.304 መልስዎ አዎ ከሆነ ከሚከተሉት ውስጥ የትኛው/ቹ የአካል ብቃት እንቅስቃሴዎች ለርስዎ ተመራጭ ነበሩ? (ከአንድ በላይ መልስ መስጠት ይችላሉ)	1. በቀስታ መራመድ	
		2. መደነስ	
		3. መዋኘት	
		4. በፍጥነት መራመድ	
		5. ደረጃ መውጣት መውረድ	
		6. በቀስታ መሮጥ	
		7. በፍጥነት መሮጥ	
		8. ሌላ ካለ	

1.2. ነፍሰጡር እናቶች ስለ ቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ጠቀሜታ እና ስለ ሚክላክልባቸው ጉዳዮች ያላቸውን እውቀት በተመለከተ ጥያቄዎች

መመሪያ: አርፍተ ነገሩ ትክክል ከሆነ አዎ ያክብቡ፤ ትክክል ካልሆነ አይደለም ያክብቡ ፤ እርግጠኛ ካልሆኑ እርግጠኛ አደለሁም ያክብቡ

ተ.ቁ	ጥያቄዎች	የመልስ አማራጮች
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ሀ. በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ለእናቶች እና ለፅንሱ ያለውን ጠቀሜታ በተመለከተ ጥያቄዎች		
307	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ለእናቶች ጤና ጠቃሚ ነው	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
308	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት በእርግዝና ምክንያት የሚከሰቱ ጉዳዮችን ይከላከላል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
309	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ድካም እና ጭንቀት ይቀንሳል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
310	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ድብርትን ይቀንሳል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
311	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት በእርግዝና ምክንያት የሚከሰትን ከፍተኛ የደም ግፊት ይከላከላል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
312	በእርግዝና ወቅት የአካል እንቅስቃሴ መስራት በእርግዝና ምክንያት የሚከሰት የስኳር በሽታን ይከላከላል/ይቀንሳል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
313	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ቀድሞ ላይ የመውለድ እድልን ይቀንሳል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
314	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት በምጥና ወሊድ ወቅት የሚፈጠር ህመምን ይቀንሳል፡፡	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም

315	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ለፅንሱ ጠቃሚ ነው	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
316	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ጊዜው ሳይደርስ ምጥ እንዳይጀምር ይከላከላል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
317	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት በምጥ ጊዜ የፅንስ መታፈንን እንዳይከሰት ይከላከላል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
318	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት የፅንሱ ክብደት ከመጠን በላይ እንዳይጨምር ይከላከላል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
ለ. በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት የሚከለክልባቸው ጉዳዮች በተመለከተ ጥያቄ		
319	በእርግዝና ወቅት ሙሉ-በሙሉ በጀርባ ተኝቶ የአካል ብቃት እንቅስቃሴ መስራት አይመከርም፡፡	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
320	በእርግዝና ወቅት ከማህፀን ደም መፍሰስ ካለ የአካል ብቃት እንቅስቃሴ መስራት አይመከርም፡፡	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
321	በእርግዝና ወቅት ከፍተኛ የደም ማነስ ካለ የአካል ብቃት እንቅስቃሴ መስራት አይመከርም፡፡	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
322	በእርግዝና ወቅት በአግባቡ ቁጥጥር ያልተደረገበት የስኳር በሽታ ካለ የአካል	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም

	ብቃት እንቅስቃሴ መስራት የተከለከለ ነው።	
323	በእርግዝና ወቅት በአግባቡ ቁጥጥር ያልተደረገበት የግፊት በሽታ ካለ የአካል ብቃት እንቅስቃሴ መስራት የተከለከለ ነው።	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
324	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ በሚሰሩበት ጊዜ የእራስ ምታት ህመም ስሜት ካለ እንቅስቃሴውን ማቆም አስፈላጊ ነው	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም
325	በእርግዝና ወቅት የእንሽርት ውሃ ከፈሰሰ የአካል ብቃት እንቅስቃሴ መስራት አይመከርም።	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም

ክፍል 4: በእርግዝና ጊዜ ሰለሚደረግ የአካል ብቃት እንቅስቃሴ የተመለከቱ የአመለካከት ጥያቄዎች

ተ.ቁ	ጥያቄ	የመልስ አማራጮች
401	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት አስፈላጊ ነው ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም። 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
402	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ ማድረግ ይቻላል ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም። 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
403	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት በፅንሱ እና በእርስዎ ላይ አደጋ	1. በጣም አልስማማም 2. አልስማማም። 3. ገለልተኛ

	ያስከትላል ብለው ያምናሉ?	4. እስማማለሁ 5. በጣም እስማማለሁ
404	የአካል ብቃት እንቅስቃሴ መስራት በእርግዝና ምክንያት የሚመጣን ጥሩ ያልሆነ ስሜት ይቀንሳል ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
405	የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ መስራት ከወለዱ በኋላ ወደ ቀድሞው የሰውነት አቋም ወይም ቅርጽ እንዲመለስ ይረዳል ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
406	በእርግዝና ወቅት የአካል ብቃት እንቅስቃሴ መስራት ከድህረ ወሊድ በኋላ ቶሎ ለማገገም ይረዳል ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
407	ነፍሰጡር እናቶች የአካል ብቃት እንቅስቃሴ ለመስራት በጤና ባለሙያዎች መታገዝ አለባቸው ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
408	የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ መስራት ከባህላቸው ጋር ይስማማል ብለው ያምናሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ

ክፍል 5፡ የነፍሰጡር እናቶች የግል እና የአገልግሎት ሰጭ ተቆማት ተዛማጅ ባህሪዎች በተመለከቱ ጥያቄዎች

ተ.ቁ.	ጥያቄ	የመልስ ማራጭ
501	የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ለማድረግ በቂ ቦታና መገልገያዎች አለዎት?	1. አዎ 2. አይ
502	የቅድመ ወሊድ የአካል ብቃት እንቅስቃሴ ለማድረግ ምቹ ቦታና መገልገያዎች አለዎት?	1. አዎ 2. አይ
503	በዚህ እርግዝና ወቅት የሚያግዘዎብዎት ሌላ ሰው ወይም ጉዳዩ አለዎት?	1. አዎ 2. አይ
504	በዚህ እርግዝና ወቅት ስራዎትን ባቀዱት መሰረት ያከናውናሉ?	1. አዎ 2. አይ
505	በዚህ እርግዝና ወቅት ስራዎችን ካከናወኑ በኋላ የማስታወስ ችግር አለበዎት?	1. አዎ 2. አይ
506	በዚህ እርግዝና ወቅት የአካል ብቃት እንቅስቃሴ ለመስራት በቂ ጊዜ አለዎት?	1. አዎ 2. አይ
507	በዚህ እርግዝና ወቅት ሌት ውስጥ ስራ ይበዛበዎታል?	1. አዎ 2. አይ
508	በዚህ እርግዝና ወቅት ብዙን ጊዜ የድካም ስሜት ይሰማዎታል?	1. አዎ 2. አይ

ክፍል 6፡ የነፍሰጡር እናቶች የቅድመ-ወሊድ የአካል ብቃት እንቅስቃሴ ለመስራት ያላቸውን ፍላጎት መለኪያ ጥያቄዎች

እንደ ፈጣን የእግር ጉዞ(ወክ)፣ሳይክል በመንዳት፣መፍታታትና ትንፋሽ መውሰድ፣የጉልበትና የግር ጣቶች እንቅስቃሴ፣የዳሌ ወለል (ብድግ ቁጭ ማለት ወይም ሽንት የመቸጠር) እንቅስቃሴ፣ ውሃ ዋና እና የመሳሰሉትን የአካል ብቃት እንቅስቃሴዎችን በቅድመ ወሊድ ወቅት መስራት የመከራል.

ተ.ቁ	ጥያቄ	የመልስ አማራጭ
601	እርስዎ በዚህ የርግዝና ወቅት ቢንስ በቀን ለ 30 ደቂቃ ወይም በሳምንት ለ 3 ቀን(150 ደቂቃ) በተከታታይ የቅድመ ቀሊድ የአካል ብቃት እንቅስቃሴ ለመስራት አስቦዋል?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
602	እርስዎ በዚህ የርግዝና ወቅት ቢንስ በቀን ለ 30 ደቂቃ ወይም በሳምንት ለ 3 ቀን(150 ደቂቃ) የቅድመ ቀሊድ የአካል ብቃት እንቅስቃሴ ለመስራት ወስነዋል?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
603	እርስዎ በዚህ የርግዝና ቀጣይ ጊዜያት (ቢንስ በቀን ለ 30 ደቂቃ ወይም በሳምንት ለ 3 ቀን(150 ደቂቃ) የቅድመ ቀሊድ የአካል ብቃት እንቅስቃሴ ለመስራት ይሞክራሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ
604	እርስዎ በዚህ የርግዝና ወቅት ቢንስ በቀን ለ 30 ደቂቃ ወይም በሳምንት ለ 3 ቀን(150 ደቂቃ) የቅድመ ቀሊድ የአካል ብቃት እንቅስቃሴ በፕሮግራም ለመስራት ይፈልጋሉ?	1. በጣም አልስማማም 2. አልስማማም:: 3. ገለልተኛ 4. እስማማለሁ 5. በጣም እስማማለሁ

አመሰግናለሁ