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Knowledge, Attitudes and Practices of Women Regarding Physical Activity during Pregnancy and its Related Factors

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ABSTRACT

Background: The knowledge, attitudes, and practices (KAP) of women regarding physical activity (PA) during pregnancy and the factors influencing these aspects are crucial for improving maternal and fetal health outcomes. Understanding these dimensions helps identify gaps in education, cultural influences, barriers to engagement, and strategies for promoting physical activity during pregnancy.Physical activity consists of planned, repetitive, and intentional movements that reduce the risk of pregnancy-related complications. Worldwide, there is a high rate of physical inactivity during pregnancy.While awareness about the benefits of physical activity during pregnancy is growing, many women in Saudi Arabia still lack comprehensive knowledge about the guidelines and safety precautions for exercise during pregnancy.

The aim of the study:to assess women's knowledge, attitude, and practice toward physical activity during pregnancy and its related factors among antenatal care.

Method: A cross-sectional study was conducted among 614 pregnant women receiving antenatal care fromFebruaryto April 2024. The study participants were selected using systematic random sampling technique. Data were collected using a pretested, face-to-face interviewer-administered and semi-structured questionnaire. The data were cleaned, coded, and entered into Epi Data (version 4.6) and analyzed using SPSS (version 28). Bivariate and multivariate binary logistic regression analyses were performed to identify factors associated with knowledge, attitude, and practice toward physical activity during pregnancy. Variables with a P value of <2 in the bivariate analysis were transferred to the multivariate analysis. Finally, the adjusted odds ratio and 95% confidence interval with a P value of <.05 in the multivariate analysis were considered statistically significant.

Results: The study found that 56.3% of participants had good knowledge, 51.5% of participants had a favorable attitude, and 32.2% of participants practiced physical activity during pregnancy. Age, educational level, and heard about physical activity during pregnancy were positively associated with pregnant women's knowledge and attitude. In addition, age, antenatal care follow-up, no history of abortion, ever done physical exercise before becoming pregnant, and good knowledge were positively associated with pregnant women's practice of physical activity during pregnancy.

Conclusion: Our findings indicate that approximately half of the participants had good knowledge and a favorable attitude. However,almost one-third of the participants practiced physical activity during their pregnancy. It is recommended that antenatal care providers advise pregnant women to strengthen their antenatal care follow-up and offer health education and counseling about the benefits of physical activity during pregnancy.

Keywords: Knowledge, Practice, Attitude, physical activity, pregnant women

INTRODUCTION

Physical activity (PA) is vital component of a healthy pregnancy, for both the mother and her child(1). PA has been accepted internationally as main factor for the protection and improvement of health in pregnant women as

well as in the general population(2). Being physically active is recognized as crucial part of a healthy pregnancy and is correlated with improved cardiovascular function and physical fitness and reduced risk of adverse maternal outcomes including gestational diabetes, preeclampsia and preterm birth(3).According to the World Health Organization recommendations, adults aged 18 to 64 years should have at least 150 min of moderate-intensity, or 75 min of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of both(4).

The Centers for disease control and prevention (CDC), American college of sports medicine (ACSM) adopted this recommendation for pregnant women and advised engagement in 30 min of moderate exercise per day on most days of the week, equivalent to 7.5 MET-h/weeks(2).Globally, around 23% of adults aged 18 and over were not active enough in 2010 (men 20% and women 27%)(5).A study conducted among Saudi women in five prenatal clinics in Riyadh, KSA to evaluate prenatal health behaviors reported that only 38% of the mothers exercised regularly before pregnancy, and only one-third of them was engaged in exercise activities during pregnancy(6).

Another recent study conducted in the Al-Qassim region among pregnant Saudi women showed that most women believed that PA was important during pregnancy and demonstrated a high level of awareness about the types and amounts of PA. The study also reported that only 42% did some exercises, and the most commonly reported barrier was exhaustion (25.0%) followed by anxiety about injuring the fetus (18.1%), avoidance of exercise (16.7%), and lack of knowledge about the benefits of regular exercise (16.7%)(7). Similar findings were seen from Riyadh, which reported that awareness regarding PA and its significance in giving birth was high among pregnant women and the commonly reported roadblock for PA was exhaustion(8).

Physical activity involves all bodily movements produced by the contraction and relaxation of skeletal muscles. Physical exercise (PEx) is a type of physical activity that consists ofplanned, repetitive, and intentional movements that have several health benefits for pregnant women and their fetuses(9, 10).Comprehensive antenatal care (ANC) is an effective intervention toprevent maternal morbidity and mortality. This type of care aims to ensure a positive pregnancy and birth experience by identifying risks, managing pregnancy-related complications, and promoting health education(11, 12). PEx is oneof the health promotion and preventive measures for pregnancy-related complications(9,10). PEx is reliable, safe, and beneficial during pregnancy for both the pregnant women and fetuses, with no obstetrical or medical contraindications(10, 13, 14).

Engaging in PEx during pregnancy enhances physical fitness, reduces gestational weight gain, lowers the risk of gestational diabetes mellitus, decreases cesarean delivery rates, and prevents hypertension, postpartum depression, and instrumental deliveries(15, 16). The recommended PEx in pregnancy include walking,relaxation/breathing exercises, pelvic floor exercises, back care exercises, ankle and toe exercises, aerobic swimming, and labor preparation exercises, such as squatting and pelvic tilts. The American College of Obstetricians and Gynecologists (ACOG) and the American College of Sports Medicine recommended that light to moderate PEx during pregnancy is generally safe and beneficial for most women. Pregnant women should aimfor at least 150 minutes of moderateintensity exercise per week, at least 3 days per week, with a minimum of 30 minutes per session(16, 17).

Despite these well-documented benefits, little attention has been given to PEx during pregnancy. To the best of the investigator's knowledge, no study has been conducted on pregnant women's knowledge, attitude, and practice toward PEx during pregnancy and its related factors among ANC attendants in this study area. A limited number of studies have been conducted in this topic. Therefore, this study aimed to fill this gap by assessing pregnant women's knowledge, attitude, and practice toward PEx during pregnancy and its related factors among ANC attendants at health center in Makkah Al-Mukarramah, KSA.

MATERIALS AND METHODS

This study was conducted at health centers in Makkah Al-Mukarramah, KSA. The number of pregnant women, who attended ANC follow-ups from January 2022, to January 2023, was 1223. A cross-sectional study was conducted from March 2024 to May 2024. All pregnant women who had attended ANC follow-ups at health centersincluded during the study period.Pregnant women who had antepartumhemorrhage, orthopedics limitation, and seizure disorder at the time of data collection were excluded.

The sample size was calculated using single population proportion formula Epi Info software (version 7). The study considered the maximum calculated sample size. Therefore, the proportion of pregnant women having good knowledge of PEx during pregnancy taken from a study conducted was given the maximum sample size of 384. Using a1.5 design effect and considering a non-response rate of 10% (38), the final sample size becomes 614. The dependent variables of this study were knowledge, attitude, and practice. The independent variables considered in this study were socio-demographic-related characteristics, obstetrical-related characteristics, and awareness of pregnant women toward PEx during pregnancy−related characteristics.

Operational definitions

Knowledge of physical exercise during pregnancy is defined as a pregnant woman's ideas about the health benefits and contraindications of PEx during pregnancy(18-20).Good knowledge is defined as participants whose responses were greater than or equal to the meanvalue (2.4942) of knowledge of PExduring pregnancy questions(18-20).Attitude toward physical exercise during pregnancy is defined as the opinion of a pregnant woman concerning performing PEx during pregnancy(18-20).Favorable attitude is defined as participants whose responses were greater than or equal to the mean value (3.6439) of attitude toward PEx during pregnancy questions(18-20).Practice physical exercise during pregnancy is defined as a pregnant woman who participates in or does any type of antenatal PEx in the current pregnancy that is recommended by ACOG(9).Practiced is defined as pregnant women who practiced any type of PEx during pregnancy in frequency at least 3 times a week and duration of≥30 minute per session(9).

Data were collected using a pretested, face-to-face interviewer-administered and semi-structured questionnaire. The tool was adopted and adapted from different literatures reviewed and was based on ACOG recommendations of PEx during pregnancy(9, 18-21). The questionnaire consisted of six parts: the first part, socio-demographic characteristics (both open- and close-ended questions); the second part, obstetrical characteristics (open-ended questions); the third part, awareness of pregnant women toward PEx during pregnancy (close-ended questions); the fourth part, knowledge of PEx during pregnancy (close-ended questions); the fifth part, attitude toward PEx during pregnancy (close-ended questions); and the sixth part, practice of PEx during pregnancy (both open- and close- ended questions).

Notably, two public health officers with master's degrees (supervisors) and ten data collectors (five midwives with degrees and five with diplomas) were participated in the data gathering process. Study objectives, data collection methods, participant confidentiality, eligibility requirements, informed consent, and interview techniques were all covered in the two days of training. Throughout the data collection process, careful observation was conducted.

The tool was developed in English, translated into Arabic, and then back- translated to ensure accuracy. Notably, 4 academicians reviewed the tool to determine its content validity, resulting in a content validity index of 0.95 based on their evaluations. Valuable suggestions and recommendations from experts were incorporated into the tool. Data were collected by data collectors and study participants. A pretest was performed with 5% of the sample size. The tool was assessed for clarity, readability, comprehensiveness, and accuracy. Feedback was incorporated.

The internal consistency/reliability of the item was checked by computing the Cronbach alpha. The values of the Cronbach alpha were 0.83 for knowledge assessment and 0.76 for attitude assessment.Data were manually checked for completeness and cleaned. The questionnaire was coded, and data were entered into EpiData (version 4.6.0.0) and then exported to SPSS (version 28) for analysis. Descriptive statistics (mean, median, standard deviation, and percentage) and inferential statistics (adjusted odds ratio [AOR]) were used to summarize the data.

Bivariate logistic regression analysis was performed to identify the associations between each independent variable and pregnant women's knowledge, attitude, and practice toward PEx during pregnancy. Variables with a P value of <.2 in bivariateanalysis were included in the multivariate logistic regression. In the multivariate logistic regression analysis, statistically significant variables (P value of <.05) were reported with AORs and 95% CIs. The Hosmer-Lemeshow goodness-of-fit test was used (P value of>.05 considered statistically significant). Multicollinearity was checked using thevariance inflation factor. The results were presented as texts, tables, and graphs.

Ethical approval from the health centers were obtained after explaining the objectives and methods of data collection. Written informed consent was obtained from pregnant women to participate in the study. Before enrollment, the pregnant women were informed about the objectives of the study, its importance, and the right not to participate in the study. Informed verbal consent was taken from all study participants before data collectionbecause some of the study participants could not read and write. Anonymity and confidentiality were maintained.

RESULTS

Table (1): shows that socio-demographic characteristics of study participants. The response rate of the study was 98.0%. The median age of the participants was 28 years (interquartile range, 25−31). More than half of the participants (58.8%) were in the age category between 25 and 34 years. One-third of the study participants (33.7%) attended primary school. Regarding their occupation, 44.3% of the study participants were housewives.

Table 1: Socio-demographic characteristics of pregnant women (n=600)

Variables	Category	n	%
Ageofwomen(y)	<25	142	23.7

Variables	Category	n	%
25−34		353	58.8
≥35		105	17.5
Women's educationallevel	Noformal education	99	16.5
Primaryschool		202	33.7
Secondaryschool		193	32.2
College and university		106	17.7
Women's occupation	Governmental employed	96	16.0
Privatebusiness		177	29.5
Housewife		266	44.3
Nongovernmental		61	10.2

Table (2) shows obstetrics characteristics of study participants. Regarding ANC follow-up, nearly half of the participants (44.2%) had attended≥3 ANC follow-ups. More than half of the participants (58.0%) were multigravida, and nearly half of the participants(46.2%) were nulliparous. Almost half of the study participants were within 7 to 9 months of pregnancy.

Table 2: Obstetrics characteristics of pregnant women (n=600)

Variables	Category	n	%
ANCfollow-up	Notstarted	98	16.3
	1−2	237	39.5
	≥3	265	44.2
Gravidity	Primigravida	252	42.0
	Multigravida	348	58.0
Parity	Nulliparous	277	46.2
	Primiparous	197	32.8
	Multiparous	126	21.0
Numberof livingchildrentheyhave	Nochild	276	46.0
	1−2children	241	40.2
	>2children	83	13.8
Historyofabortion	Yes	66	11.0
	No	534	89.0
Gestationalage	<4mo	71	11.8
	4−6mo	233	38.8
	7−9mo	296	49.3

Table 3: Shows that Awareness of pregnant women about physical exercise during pregnancy. 236 study participants (39.3%) had heard about PEx during pregnancy. Of those who heard about PEx during pregnancy, 100.0%, 13.6%, 10.2%, and 4.2% of the study participants heard about walking,relaxation/breathing, preparing for labor (squatting and pelvic tilts), and pelvic floor muscle exercise, respectively. Most of the study participants (88.2%) did not practice PEx before becoming pregnant.

Variables	Category	n	%
Ever heard about PEx during pregnancy (n=600)	Yes	263	39.3
	No	364	60.7
Types of PEx during pregnancy you heard or aware (n=236)a	Walking	236	100.0
	Relaxation/breathing	32	13.6
	Pelvic floor exercise	10	4.2
	Back care exercises	1	0.4
	Ankle and toe exercises	1	0.4
	Swimming	5	2.1
	Preparing for labor: squatting and pelvic tilts	24	10.2
Ever done PEx before becoming pregnant (n=600)	Yes	71	11.8
	No	529	88.2

Variables	Category	n	%
PEx, physical exercise. aMultiple responses.			

Table (4) shows that pregnant women's knowledge level toward benefits and contraindications of physicalexercise during pregnancy. Regarding knowledge assessment questions about the benefits of PEx duringpregnancy, 40.7%, 63.5%, 88.8%, 75.3%,and 62.5% of the study participantsknew that PEx during pregnancy canreduce the risk of excessive weight gain,can strengthen pelvic floor muscles, canprevent antenatal and postnatal depression, has benefits for general health anddevelopment of the baby, and improvesthe ability to cope with labor and delivery, respectively. Regarding contraindications of PEx during pregnancy,56.0%, 59.7%, 100.0%, and 54.0% of thestudy participants knew that chest pain,difficulty in breathing, vaginal bleeding,and decreased fetus movement duringpregnancy were contraindicated fordoing PEx during pregnancy, respectively.

Table 4: Pregnant women's knowledge level toward benefits and contraindications of physical exercise

Variables	Category	n	%
Benefits			
Reducesriskofbackpainduringpregnancy	I do not now	72	12.0
	No	23	3.8
	Yes	505	84.2
Reduces the risk of gestational diabetes mellitus	I do not now	98	16.3
	No	25	4.2
	Yes	477	79.5
Reduce risk of hypertension	I do not now	125	20.8
	No	25	4.2
	Yes	450	75.0
More rapid postnatal recovery	I do not now	199	33.2
	No	5	0.8
	Yes	396	66.0
Contraindications			
Poorly controlled gestational diabetes mellitus during pregnancy	I do not now	253	42.2
	No	7	1.2
	Yes	340	56.6
Uncontrolled hypertension during pregnancy	I do not now	112	18.7
	No	7	1.2
	Yes	481	80.1
Uterine contractions during pregnancy	I do not now	46	7.7
	No	0	0.0
	Yes	554	92.3

Table (5) shows that pregnant women's attitude level toward physical exercise during pregnancy. Regarding attitude assessment questions toward PEx during pregnancy, approximately 382 study participants (63.7%) agree that PEx during pregnancy is necessary. One-third of the study participants (33.8%) strongly disagreed that PEx during pregnancy poses a risk to the fetus. More than half of the study participants (57.0%) agree that PExduring pregnancy should be performed under the guidance of a healthcare professional. Moreover, 422 studyparticipants (70.5%) personally like doing PEx.

Table 5: Pregnant women's attitude level toward PEx during pregnancy (n=600)

Variables	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Do you feel that performing PEx during pregnancy is necessary?	4	0.7	15	2.5	32	5.3	382	63.7	167	27.8
Do you feel that performing PEx during pregnancy has risk to thefetus?	203	33.8	167	27.8	200	33.3	28	4.7	2	0.3
Do you feel that antenatal exercise suits with our culture?	2	0.3	19	3.2	133	22.2	316	52.7	130	21.7
Do you feel that pregnant women should perform PEx under theguidance of a healthcare professional?	7	1.2	26	4.3	62	10.3	342	57	163	27.2
Do you feel that performing antenatal PEx can reduce pregnancy-related complications?	0	0.0	42	7.0	204	34.0	240	43.3	94	15.7
Do you feel that practicing PEx during pregnancy helps in postde-livery recovery?	1	0.2	35	5.8	230	38.3	255	42.5	79	13.3
Do you feel that PEx will help you get back to your shape?Do you think that regular PEx facilitates normal delivery?	1	0.2	29	4.8	223	37.2	247	41.2	100	16.7
	1	0.2	36	6.0	183	30.5	300	50.0	80	13.3

Table (6) shows that pregnant women's practice of physical exercise during pregnancy. Regarding the practice of PEx during pregnancy, almost one-third of the study participants (32.2%) practiced PEx in their current pregnancy. Among those who practiced PEx during pregnancy, 193 study participants (100.0%)practiced walking, followed by relaxation/breathing, pelvic floor muscle exercise, and labor preparation exercises (squatting and pelvic tilts), with values of 9.8%, 7.8%, and 6.7%, respectively.Moreover, 43.0%, 36.5%, and 20.7% of the study participants were advised bythemselves, other persons, and healthcare providers, respectively. Among those who practiced PEx during pregnancy, 21.8% and 54.9% of the studyparticipants practiced PEx with a frequency of ≥3 times per week and ≥30 minutes of duration of PEx during pregnancy per session, respectively.

Table 6: Pregnant women's practice of PEx during pregnancy (n=600)

Variables	Category	n	%
Do you practice any type of PEx in your current pregnancy? (n=600)	Yes	193	32.2
	No	407	67.8
Who advised you to do PEx during pregnancy? (n=193)	Healthcare provider	40	20.7
	Self	83	43.0
	Other person	70	36.3
How many times per week do you exercise? (n=193)	<3 times	151	78.2
	≥3 times	42	21.8
For how many minutes do you exercise per session?	<30 min	87	45.1
	≥30 min	106	54.9

Table (7) shows that the most common reasons why pregnant women did not practice PEx during pregnancy were as follows: health professional did not advise the patient to do exercise (39.9%), lack of time (27.2%), and lack of information (19.2%).

Table 7: Reasons why pregnant women did not practice physical exercise during pregnancy (n=407)

Reasons (n=407)[a]	n	%
Is afraid that it may be harmful to the fetus	27	6.7
Lack of time	110	27.2
Lack of motivation	39	9.6
I do not have information	78	19.2
Pregnancy discomfort	8	2.0
My health professional did not advise me to do exercises	162	39.9
I am not in good health	4	1.0
Because of cultural reason	0	0.0
Feel tired	25	6.2
[a] Multiple response.		

Table (8) shows that factors associated with pregnant women's knowledge, attitude, and practice toward physical exercise during pregnancy. Bivariate and multivariate binary logistic regression analyses were performed to assess theassociation between pregnant women's knowledge of PEx during pregnancy and its associated factors. In bivariate logistic regression analysis, 7 independent variables, such as age, level of education, occupational status, income level, history of abortion, ever heard about PEx during pregnancy, and history of PEx before becoming pregnant, were eligible for multivariate binarylogistic regression analysis with a cutoff point (P<.2). Multivariate binary logistic regression analysis was performed by taking 7 independent variables simultaneously. After testing the logistic assumptions, multivariate logistic regression analysis was performed usingthe backward stepwise linear regression variable selection method.

After controlling for cofounders, the odds of having good knowledge of PEx during pregnancy was 1.623 times higher among pregnant women whose ages were between 25 and 34 years thanthose whose ages were <25 years (AOR,1.623; 95% CI, 1.064−2.476).The odds of having good knowledge of PEx during pregnancy was nearly 2 times higher in pregnant women who had primary education than in those who did not have formal education (AOR, 2.046; 95% CI, 1.208−3.465).The odds of having good knowledge of PEx during pregnancy was4.632 times higher in pregnant women who had heard about PEx during preg- nancy than in those who had not heard about PEx during pregnancy (AOR, 4.632; 95% CI, 2.995−7.165)

Table 8: Bivariate and multivariate logistic regression analyses for factors associated with pregnant women's knowledge of PEx during pregnancy among antenatal care

Variables		Knowledge level		COR (95% CI)	AOR (95% CI)
		Poor, n (%)	Good, n (%)		
Age (y)	<25	72 (50.7%)	70 (49.3%)	1	1
25−34		123 (34.8%)	230 (65.2%)	1.923 (1.295−2.855)[a]	1.623 (1.064−2.476)[a]
≥35		67 (63.8%)	38 (36.2%)	0.583 (0.348−0.978)[a]	0.560 (0.321−0.977)
Level of education	No formal	60 (60.6%)	39 (39.4%)	1	1
	Primary	95 (47.0%)	107 (53.0%)	1.733 (1.063−2.825)[a]	2.046 (1.208−3.465)[a]
	Secondary	76 (39.4%)	117 (60.6%)	2.368 (1.442−3.889)[a]	1.310 (0.730−2.352)
	College and above	31 (29.2%)	75 (70.8%)	3.722 (2.082−6.655)[a]	1.849 (0.964−3.548)
Ever heard PEx during Pregnancy	No	209 (57.4%)	155 (42.6%)	1	1
	Yes	53 (22.5%)	183 (77.3%)	4.656 (3.217−6.738)[a]	4.632 (2.995−7.165)[a]

AOR, adjusted odds ratio; *CI*, confidence interval; *COR*, crude odds ratio; *PEx*, physical exercise.

[a] A *P* value of <.05 is considered statistically significant.

DISCUSSION

The current study aimed to assess pregnant women's knowledge, attitude, andpractice toward PEx during pregnancyand identify associated factors amongANC attendants at selected health centers in KSA.This study found that 56.33% (95% CI,52.35%−60.31%) of pregnant womenhad good knowledge of the benefits andcontraindications of PEx during pregnancy. This finding aligns with studiesconducted in Nigeria (52.4%)(22); BahirDar, Ethiopia (55.8%)(19); and Pakistan(53.8%)(23).However, the current study's findingswere lower than those from studies in Brazil (65.6%)(24) and India (66.0%)(25). Thisdiscrepancy may be due to differences ineducational levels, as many participants inthe current study had only primary education and nearly two-thirds had not heardabout PEx during pregnancy.

Conversely, the findings were higherthan those reported in Addis Ababa,Ethiopia (50.40%) (18); Gondar, Ethiopia(39.50%) (20); Arba Minch, Ethiopia(46.30%)(21); Saudi Arabia (50.67%)(26), SriLanka (27.33%)(27); Zambia (19.00%) (28);and Iraq (7%.00)(29). Possible reasons forthese higher results includesociocultural differences, sample size, and study population. Increased awareness over time and a higher proportionof study participants with bettereducational backgrounds may also contribute to these differences. In addition,urban residents might have more accessto information about PEx during pregnancy through various media sources.

This study revealed that 51.50% (95% CI, 47.49%−55.51%) of pregnant women had a favorable attitude toward PEx during pregnancy. This finding was in line with studies conducted in Ethiopia (55.3%) (20); Bahir Dar, Ethiopia (53.3%)(19); and Saudi Arabia (56.1%)(26).In contrast, the finding of this study was lower than the findings of previous studies conducted in Pakistan (79.0%)(23), Brazil (93.8%)(24), Zambia(93.0%)(28), and Nigeria (84.2%)(22). The possible explanations for the discrepancy might be that most study participants had secondary and above educational levels, heard about PEx during pregnancy, and had good knowledge about PEx during pregnancy. In addition, the study noted in these countries that their study participant's attitude level was assessed using a single question. Furthermore, the discrepancy may be that there was a higher proportion of study participants who had attended college and above educational level. In addition, most study participants were counseled by doctors and midwives about PEx during pregnancy. Therefore, better education of the study participants and counseling by healthcare providers during ANC follow-up were important factors in pregnant women's attitude toward PEx during pregnancy.

The finding of this study was higher than the study conducted in Addis Ababa, Ethiopia (27.9%)(18); Arba Minch, Ethiopia (46.0%)(21); and Sri Lanka (35.5%)(27).This higher result may be due to the following reasons. First, it may be due to the influence of pregnant women's knowledge of PEx during pregnancy on pregnant women's attitude toward PEx during pregnancy. Therefore, good knowledge of study participants about PEx during pregnancy can change pregnant women's misconceptions about PEx during pregnancy. Second, because of differences in time lag when the previous researches were conducted, current awareness levelof pregnant women might cause the discrepancy. Third, it might be due to educational background, sociocultural differences, and differences in study populations.

According to the current study, 32.20% of pregnant women practiced PEx (95% CI, 28.42%−35.91%) during their current pregnancy. This finding was in line with previous studies conducted in Gondar, Ethiopia (30.9%)(20),and Brazil (29.0%) (24).However, the finding of the current study showed a lower rate of pregnant women's practice of PEx during pregnancy than the findings of the previous studies conducted in Turkey (67.1%)(30), Pakistan (46.2%)(23), and Arba Minch, Ethiopia (62.7%)(21). This disparity may be due to the study participants having good knowledge, having a habit of PEx before becoming pregnant(21, 30),and getting advice from healthcare providers to practice PEx during pregnancy(21, 30).

In contrast, the result of the current study concerning pregnant women's practice of PEx during the current pregnancy was higher than the results of studies conducted in Addis Ababa, Ethiopia (22.3%) (18); Mekele, Ethiopia (20.7%)(31); India (18.0%)(25); Saudi Arabia (18.0%)(26); Sri Lanka (13.6%)(27); and South Africa (27.7%) (32). This higher result in the current study may be because this study included study participants from both private and govern- mental health institutions, used a larger sample size than other studies, and included study participants that had good knowledge and a favorable attitude toward PEx during pregnancy.

CONCLUSIONS

This study revealed that approximately half of pregnant women had good knowledge and a favorable attitude toward PEx during pregnancy. However, almost one-third of pregnant women practiced PEx during their current pregnancy. Pregnant women in the age category of 25 to 34 years, primary educational level, and heard about PEx during pregnancy were factors positively associated with good knowledge of PEx during pregnancy. In addition, age from 25 to34 years, educational level (primary, secondary, and college and above), and heard about PEx during pregnancy were factors positively associated with a favorable attitude toward PEx during pregnancy. Age from 25 to 34 years,ANC follow-up (≥3), no history of abortion, ever done PEx before becoming pregnant, and having good knowledge were factors positively associated with the practice of PEx during pregnancy.

Recommendation

Antenatal care (ANC) providers should advise pregnant women to strengthen ANC follow-up, giving special attention to pregnant women with a history of abortion and encouraging women to practice PEx before becoming pregnant.ANC providers should provide health education and counseling regarding the benefits and contraindications of PEx during pregnancy for pregnant women during ANC follow-up to improve their knowledge, attitude, and practice toward PEx during pregnancy.

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