



RESEARCH ARTICLE



Knowledge, attitude and practice of antenatal exercise (ANEx) among married women in Afghanistan: A cross-sectional study

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Background: Antenatal physical activity is an important physical, mental, and biochemical factor to consider. Several studies across the world have demonstrated the importance of physical activity during the antenatal period. Various factors are associated with knowledge, attitudes, and practices related to Antenatal PA. This study aimed to determine the knowledge, attitudes, and practices related to Antenatal PA among married women in Afghanistan.

Methods: This community-based cross-sectional study was conducted in Herat province. In total, 316 married women age group–16–60 were included in this study. Participants were asked about their knowledge, attitudes, and practices regarding Antenatal exercise (ANEx).

Results: More than half (56.3%) of the participants were between 16–30 years old. Two-thirds of the participants lived in urban areas, and one-sixth of the participants were illiterate (57.9%). Less than one-third of the participants had heard of antenatal exercises (32.0%). Approximately 72% of the participants had poor knowledge, 90% had poor attitudes, and only 4% practiced antenatal exercises. Higher education, residence in urban areas, and higher monthly family income were important predictors of knowledge regarding ANEx. Similarly, a greater number of children and higher education levels are determinants of ANEx practice.

Conclusion: Poor knowledge, attitudes, and practices remained the main barriers to ANEx. In the current situation of political instability and a lack of healthcare facilities, community workers can only be a way to address this issue.

Introduction

Exercise is a healthy and beneficial practice for improving physical, mental, and emotional wellbeing. People who exercise regularly often experience

numerous benefits. Exercise also has similar benefits for pregnant mothers and is believed to pose no risk to maternal or fetal health. During pregnancy, exercise

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can be beneficial for both the mother and the baby (1-2). Antenatal exercise has benefits related to physical health, mental health, and biochemical profiles to prevent the development of gestational diabetes, and cardiovascular diseases improve obstructive outcome (1,3-4).

The American Congress of Obstetricians and Gynecologists (ACOG) recommends that women participate in structured aerobic physical exercise during pregnancy. Aerobic exercise for at least 150 min per week is recommended for healthy pregnant and postpartum women (5,6). Some safe and effective exercises for pregnant women may include walking, yoga, strength training to help strengthen the muscles that will be used during labor and delivery, and pelvic floor exercises to help strengthen the muscles that support the bladder, uterus, and rectum (6-7). However, consultation with a healthcare provider before starting or continuing any exercise routine during pregnancy is necessary, especially if there is a history of medical conditions, complications, or high-risk pregnancy. The type and intensity of exercise may vary depending on the pregnancy stage, fitness level, and individual needs (5).

Physical inactivity is the fourth leading risk factor of early maternal mortality worldwide. Consequently, thousands of pregnant women die due to different risks, which can be easily prevented by antenatal exercise (4). The maternal mortality rate in Afghanistan is relatively high. In 2017, a study compared the rate of maternal mortality in Kabul, the capital city of Afghanistan, and Ragh, a town in Badakhshan Province in the northeastern part of Afghanistan, and showed that the maternal mortality ratio in Ragh (713 per 100,000 live births) was quadruple that in Kabul (166 per 100,000 live births). This indicates the difference in maternal mortality rates in rural areas compared to urban areas and is dependent on multiple factors, including the level of education, resources, and cultural or travel barriers (8-10).

Various factors, such as poor socioeconomic status, poor literacy, cultural norms, and safety issues lead to poor knowledge, misconceptions, and poor compliance with antenatal exercise (8,11). Even if knowledge is present, poor involvement in decision-making related to health is also an important determinant of antenatal healthcare seeking. (9) The

World Health Organization (WHO) has set a minimum threshold for four ANC visits, which is consistent with Afghanistan's national guidelines. However, in Afghanistan, less than 20% of women completed the recommended four or more ANC visits in 2015 (12-14).

Various other political and cultural changes have worsened the situation. Poor economic conditions are also emphasized as a main obstacle to access healthcare resources; war and political instability in Afghanistan have further made healthcare resources inaccessible to nearly 4 million women and girls in Afghanistan (9). Moreover, following the recent Taliban takeover, women showed limited involvement in physical activity.

Given the limited available information and studies on this topic, the present study aimed to investigate the knowledge and attitudes of married women in Afghanistan regarding antenatal exercise.

Materials and Methods

The Afghanistan Center for Epidemiological Studies conducted a cross-sectional study of Public Health Facilities in Herat Province, Afghanistan.

Study Participants: All married women aged 16-60 years, visited the public health facility of Herat Province, Afghanistan, were included in this study. All consenting married women were included in the study.

Sample size and sampling strategy: The target sample size was determined using the formula $N = (Z\alpha)^2 P(1 - P)/d^2$, with $\alpha = 0.05$ and $Z\alpha = 1.96$, and the acceptable margin of error (d) for the proportion was set at 6%. The Open Epi software (v3.01) was used to calculate the sample size. Considering a prevalence of 39.4%, the final sample size was calculated to be 316. The total number of samples was collected according to the total OPD load of the hospital. To maintain quality, it was ensured that no more than 10 patients were selected from a single site.

Data collection: The data collectors conducted face-to-face interviews and recorded participants' responses. All married women who understood the Dari language and provided written or verbal consent were included in the study.

Study instruments: In this study, a survey with two distinct sub-sections was used to comprehensively evaluate different aspects related to participants' sociodemographic characteristics and their knowledge, attitudes, and antenatal exercise practices. The

instrument was self-prepared and validated before it was administered to the participants. The instrument was prepared in English, converted to the local language, and then back-translated to English again to look for any differences in the interpretation.

The sociodemographic section of the survey consisted of inquiries aimed at gathering information on key factors, such as age, residency, number of children, education, occupation, and monthly family income. These sociodemographic factors were essential for understanding the contextual background and potential influences on participants' knowledge, attitudes, and antenatal exercise practices. To assess the participants' knowledge of antenatal exercise, nine questions (e.g., "Reduce back pain during pregnancy") were asked with three options (yes, no, I do not know). Participants were required to rate their agreement with each statement by assigning scores ranging from 0 (indicating "I don't know" or "No") or 1 (representing "Yes"). Consequently, the total score varies from 0 to 9. Thus, a higher score indicated good knowledge, whereas a lower score indicated poor knowledge. A score of 5 or higher indicated good knowledge of antenatal exercise.

To assess participant's attitude on antenatal exercise, seven questions including ("1. Physical exercise during pregnancy is necessary", "2. Feels physical exercise during pregnancy is not risky to the fetus", "3. Doing antenatal exercise suits our culture", "4. Belief pregnant women should perform exercise under the guidance of health care professionals", "5. Thinks antenatal exercise can reduce pregnancy-related complications", "6. Feel the exercising helps you get back your shape", "7. Feel exercise regimen should vary from one pregnancy women to another pregnant woman") has been asked from participants with five options ("totally disagree, "disagree, "neither agree nor disagree, "agree, "totally agree"). Participants were required to rate their agreement with each statement, assigning scores ranging from one ("totally disagree") to 5 ("totally agree"). Consequently, the total score ranged from 7 to 35. Thus, a higher score indicates a good attitude and a lower score indicates a poor attitude. A score of 21 or higher was considered a good attitude towards antenatal exercise.

To determine the practice of antenatal exercise among women, participants were asked a

single question regarding whether they had practiced antenatal exercise during their last pregnancy, with two response options ("yes" or "no"). Cronbach's alpha, which measures the internal consistency of questions related to knowledge, attitude, and practice, was 0.663 in this study, indicating a satisfactory level of reliability within the research context.

Analysis: The data entry process was carried out using Microsoft Excel 2016 to ensure accurate and well-organized recording of the study data. The collected data were analyzed using IBM SPSS for Windows, version 26.0, allowing for a comprehensive statistical examination and interpretation of the results. Descriptive statistics, such as frequencies and percentages, were calculated to provide a clear summary of data distribution and characteristics. To explore the relationships between variables, chi-square tests were used to assess associations. The significance level for this analysis was set at $p < 0.05$.

Results

A total of 316 female participated in this study. More than half (56.3%) of the participants were between 16-30 years old.

Table 1. Characteristics distribution of the study sample

Characteristic	Categories	N	(%)
Age group	16–30-years	178	56.3
	31–60-years	138	36.7
Residency	Urban	210	66.5
	Rural	106	33.5
Number of children	None	62	19.6
	1-5 child	174	55.1
	More than 5	80	25.3
Education	Illiterate	183	57.9
	Primary school	61	19.3
	Secondary school	11	3.5
	High school	32	10.1
Occupation	University	29	9.2
	Occupied/looking for job	14	4.4
Monthly family income	Non-occupied/housewife	302	95.6
	Less than \$50	156	49.4
	\$50-\$100	124	39.2
	\$100-\$200	25	7.9
	\$200-\$300	7	2.2
heard about ANEx	More than \$300	4	1.3
	Yes	101	32.0
	No	215	68.0
Total		316	100.0

Almost two-thirds of the participants lived in urban areas of Herat Province (66.5%). One-sixth of the participants were illiterate (57.9%). Only a few participants had a job or were looking for it (4.4%). Less than one-third of the participants had heard of antenatal exercises (32.0%). **[Table 1]**

Almost two-thirds of the participants (65.8 %) did not know that ANEx reduced their back pain during

pregnancy. Less than one-third of participants knew that ANEx prevented excessive weight gain (30.4%). More than two-thirds of participants were unaware that ANEx reduced the risk of uncontrolled Type1 DM (66.1%). More than half of the participants (53.8 %) did not know that ANEx was necessary for their children's and mothers' health. **[Table 2]**

Table 2. Distribution of responses to selected questions on knowledge about ANEx

Items	I don't know	Yes	No
Reduce back pain during pregnancy	208 (65.8)	100 (31.6)	8 (2.5)
Prevents excessive weight gain	203 (64.2)	96 (30.4)	17 (5.4)
Enhances energy and stamina	205 (64.9)	98 (31.0)	13 (4.1)
Helps to cope with delivery pain	200 (63.3)	100 (32.6)	13 (4.1)
Reduce risk of uncontrolled Type1 DM	209 (66.1)	94 (29.7)	13 (4.1)
Reduce risk of HTN during pregnancy	207 (65.5)	98 (31.0)	11 (3.5)
Enhances post-natal recovery	201 (63.6)	106 (33.5)	9 (2.8)
Reduces the risk of post-natal depression	199 (63.0)	111 (35.1)	6 (1.9)
Necessary for child and mother's health	170 (53.8)	136 (43.0)	10 (3.0)

Almost three-quarters of participants who were 31-60 years old, had poor knowledge of ANEx (74.6%). More than four-fifths of participants living in urban areas had poor knowledge levels (82.1%). Almost three-quarters of participants with more than

five children had poor knowledge of ANEx (72.5%). Place of residence (location), education, and monthly family income were significantly associated with participants' knowledge of ANEx. **[Table 3]**

Table 3. Distribution of knowledge of ANEx according to sociodemographic variables

Characteristic	Categories	Knowledge		p-value
		Poor, N(%)	Good, N (%)	
Age group	16-30-years	124 (69.7)	54 (30.3)	0.330
	31-60-years	103 (74.6)	35 (25.4)	
Residency	Urban	140 (66.7)	70 (33.3)	0.004
	Rural	87 (82.1)	19 (17.9)	
Number of children	None	42 (67.7)	20 (32.3)	0.724
	1-5 child	127 (73.0)	47 (27.0)	
	More than 5	58 (72.5)	22 (27.5)	
Education	Illiterate	153 (83.6)	30 (16.4)	<.001
	Primary school	40 (65.6)	21 (34.4)	
	Secondary school	6 (54.5)	5 (45.5)	
	High school	15 (50.0)	16 (50.0)	
	University	12 (41.4)	17 (58.6)	
Occupation	Occupied/looking for job	9 (64.3)	5 (35.7)	0.521
	Non-occupied/housewife	218 (72.2)	84 (27.8)	
Monthly family income	Less than \$50	119 (76.3)	37 (23.7)	0.002
	\$50-\$100	91 (73.4)	33 (26.6)	
	\$100-\$200	13 (52.0)	12 (48.0)	
	\$200-\$300	4 (57.1)	3 (42.9)	
	More than \$300	0 (0.0)	4 (100.0)	
Total		227 (71.8)	89 (28.2)	

Only one-tenth of the participants who were 16-30 years old, had a good attitude towards ANEx (10.1%). More than one-twentieth of the participants living in urban areas had a positive attitude towards

ANEx (6.2%). 90.4 Of the housewives, 90.4% had poor attitudes towards ANEx. Place of residence was found to be significantly associated with participants' attitudes towards ANEx. **[Table 4]**

Table 4. Distribution of attitude of ANEx according to sociodemographic variables

Characteristic	Categories	Attitude		p-value
		Poor, N(%)	Good, N(%)	
Age group	16–30-years	160 (89.9)	18 (10.1)	0.513
	31–60-years	127 (92.0)	11 (8.0)	
Residency	Urban	197 (93.8)	13 (6.2)	0.010
	Rural	90 (84.9)	16 (15.1)	
Number of children	None	59 (95.2)	3 (4.8)	0.417
	1-5 child	156 (89.7)	18 (10.3)	
	More than 5	72 (90.0)	8 (10.0)	
Education	Illiterate	164 (89.6)	19 (10.4)	0.925
	Primary school	56 (91.8)	5 (8.2)	
	Secondary school	10 (90.9)	1 (9.1)	
	High school	30 (93.8)	2 (6.3)	
	University	27 (93.1)	2 (6.9)	
Occupation	Occupied/looking for job	14 (100.0)	0 (0.0)	0.224
	Non-occupied/housewife	273 (90.4)	29 (9.6)	
Monthly family income	Less than \$50	136 (87.2)	20 (12.8)	0.239
	\$50-\$100	116 (93.5)	8 (6.5)	
	\$100-\$200	24 (96.0)	1 (4.0)	
	\$200-\$300	7 (100.0)	0 (0.0)	
	More than \$300	4 (100.0)	0 (0.0)	
Total		287 (90.8)	29 (9.2)	

Less than one-tenth of the participants practiced ANEx (7.9%). Less than one-fifth of participants with university-level education practiced ANEx (17.5%). One-fourth of the participants had a

monthly family income higher than \$300 and practiced ANEx (25.0%). Age, number of children, and participants' educational level were significantly associated with their practice of ANEx. **[Table 5]**

Table 5. Distribution of practice of ANEx according to sociodemographic variables

Characteristic	Categories	Practice		p-value
		Yes, N(%)	No, N(%)	
Age group	16–30-years	14 (7.9)	164 (92.1)	0.001
	31–60-years	0 (0.0)	138 (100.0)	
Residency	Urban	9 (4.3)	201 (95.7)	0.860
	Rural	5 (4.7)	101 (95.3)	
Number of children	None	2 (3.2)	60 (96.8)	0.040
	1-5 child	12 (6.9)	162 (93.1)	
	More than 5	0 (0.0)	80 (100.0)	
Education	Illiterate	6 (3.3)	177 (96.7)	0.007
	Primary school	2 (3.3)	59 (96.7)	
	Secondary school	1 (9.1)	10 (90.9)	
	High school	0 (0.0)	32 (100.0)	
	University	5 (17.5)	24 (82.8)	

Table 5 (continued)

Characteristic	Categories	Practice		p-value
		Yes, N(%)	No, N(%)	
Occupation	Occupied/looking for job.	0 (0.0)	14 (100.0)	0.410
	Non-occupied/housewife	14 (4.6)	288 (95.4)	
Monthly family income	Less than \$50	5 (3.2)	151 (96.8)	0.225
	\$50-\$100	6 (4.8)	118 (95.2)	
	\$100-\$200	2 (8.0)	23 (92.0)	
	\$200-\$300	0 (0.0)	7 (100.0)	
	More than \$300	1 (25.0)	3 (75.0)	
Total		14 (4.4)	302 (95.6)	

Discussion

The purpose of ANEx is to enhance and improve the physical and physiological health of both pregnant women and their fetuses and to avoid the mother experiencing pregnancy-related pathologies as much as possible. Of the 316 participants, almost one-third (71.8%) had poor knowledge of ANEx, whereas 32% had heard of it. Only 9.2% had good attitudes, and 7.9% had practiced physical activity. Sociodemographic factors such as place of residence, education, and income were found to be associated with adequate knowledge. Similarly, Socioeconomic variables, such as place of residence (location), age group, number of children, and education, were associated with attitude and practice.

In the current study, 32% of the participants had heard about term Antenatal Exercise and 74% had poor knowledge regarding ANEx. These findings were poorer than those reported by other authors (2, 5, 11, 16-17). The differences may be due to differences in sociodemographic factors. In the current study, the majority of participants were younger with number of previous pregnancies between one to four, poor literacy, and poor socioeconomic status. In the rest of the other studies, the age group of the participants was in the higher range, with most participants having formal employment and better socioeconomic factors. This may explain the differences in the results observed in this study compared with those conducted in relatively more developed countries. The presence of higher literacy with formal employment adds freedom of knowledge with the capacity to differentiate myths, and thus, they might have more knowledge.

The current study reported that the participants had very poor attitudes towards ANEx. Only 9.2% of the participants had a positive attitude

towards the ANEx. This is also lower than that reported by Nkhata et al. in Zambia, Sitot et al. in Ethiopia, Mbada et al. in Nigeria, Janakirama et al. in Ethiopia, and Riberio et al. in Brazil (2,5,11,16,18). These differences may be attributed to socio-demographic, cultural, and female health participation. The issues of female participation in health have been worsening, as in other sectors, in recent times, with geopolitical changes in the country (15, 19). All these factors can be attributed to the differences in the practice of ANEx among the different countries that are reported to be 7.9% in the current study, lower than the others (2, 5, 16, 18, 20-22).

In this study, we found that place of residence, education, and income were determinants of knowledge. Similar findings have been reported by Janakiraman et al. in Ethiopia and Ribeiro et al. in Brazil. [16, 20] For practices related to ANEx, we found that the age of the women and number of children were significant determinants. Nkhata et al., and Janakiraman et al. Gebregzeiabhe et al., Riberio et al. and Hailemaroium et al., reported the same results (2, 16, 18, 20-21). All studies reported that the number of children was associated with the practice of ANEx. However, none of the studies, except Gebregzeiabhe et al., found a relationship between age and the ANEx (20). This may be because most of the studies were conducted on women of reproductive age. However, the current study only included married women. Another reason may be the differences in cultural practices in different regions, as reported by Nkhata et al. (2), who found no relationship between physical activity and sociodemographic factors (23, 26). This may be because the conversion of adequate knowledge to attitudes and attitudes toward practice

is not simple and depends on several other factors. The health belief model suggests that a person's perceived susceptibility, severity, and benefits are important factors for a change in practice. These three factors depend strongly on an individual's knowledge (24). The perceived barriers partly depend on knowledge (in terms of busting myths) and external factors, such as cultural beliefs, security, and safety. Fabriger et al. described that attitude can become practical in the presence of behaviorally relevant knowledge (25).

Limitations and strengths: To the best of our knowledge, no other study has been conducted in Afghanistan to evaluate the knowledge, attitude, and practice of antenatal exercise. This prevented us from comparing the results of this study to other findings within the same geographic region, sharing similar cultural beliefs, and other financial and/or societal barriers. The study was a hospital-based study; thus, it may not fully represent the prospective study of all women in the community. In addition, this study could not capture the underlying reasons for the participants' low participation in the ANEx. A follow-up survey may resolve this issue. Despite these limitations, this study included a reasonable sample size, which allowed us to generalize our findings to the rest of the population.

Conclusion

Our findings suggest that pregnant Afghan women lack knowledge about the benefits associated with antenatal exercises; this level of engagement and knowledge about ANEx is substantially lower than global standards. Hopefully, this study will not only contribute to the public's general knowledge of ANEx but will also enable healthcare professionals and policymakers to make informed decisions on this matter.

Declarations

Ethical consideration

Ethical approval was obtained from the Ethics Committee of the Afghanistan Center for Epidemiological Studies (reference number: #22.001). Prior to participation, the participants received a detailed explanation of the study during their initial contact. Written or verbal consent was obtained from all participants. Participants were also informed of

their right to withdraw or decline participation at any stage of the study. All procedures strictly adhered to the relevant ethical guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets utilized and/or analyzed in the present study can be obtained from the corresponding author upon reasonable request.

Conflict of interest

The authors assert that there are no conflicts of interest.

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