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Assessment of antenatal care knowledge and awareness among women living in Saudi Arabia

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ABSTRACT

Background: A pregnant woman can access a variety of services through antenatal care, which should start as early as possible in the pregnancy. The study conducted to assess the knowledge and awareness about antenatal care among women in Saudi Arabia. *Methods:* A cross-sectional study was done on 948 Saudi females and a pre-designed questionnaire was used. Data about participants' demographics, importance of antenatal care visit, time of the start antenatal care visits and various obstacles to using prenatal care services were gathered. Information about pregnancy in all trimesters, importance of follow- up, and from whom the pregnant lady can get the help and advice all were assessed. *Results:* Only 9.3 percent agreed that pregnant women can take medications without consultation, drink a lot of caffeine (22.6%), to raise cats during pregnancy (37.5%), to so violent sports during pregnancy (15.1%). About 66% stressed the importance of scheduling a prenatal appointment before the third month of pregnancy. The majority of participants definitely agreed that antenatal follow-up is beneficial to track the health of the mother and fetus. Lack of transportation, trouble making appointments, depending on family and friends for information, and missing an appointment were the most frequent obstacles to prenatal care. *Conclusion:* There is a need to increase Saudi women's awareness of prenatal care services and the hurdles that prevent them from using them.

Keywords: Antenatal, Care, Knowledge, Women, Saudi Arabia.

1. INTRODUCTION

Antenatal care is a key entry point for a pregnant woman to receive a wide range of services and should begin at the beginning of the pregnancy (Warri & George, 2020). It is given to pregnant women in order to benefit both the mother and the fetus's health. It contributes to the resolution of problems by detecting them early and providing appropriate care and treatment. One of the Safe Motherhood Strategies' pillars is antenatal care, which increases the

likelihood of using a skilled attendant at birth, lowering mother morbidity and mortality (Nebeb et al., 2015). The ANC may provide pregnant women with useful information and advice to help them avoid high rates of death caused by a lack of awareness about prenatal care during their pregnancy, birth, and postnatal period (Alshabanah et al., 2018).

The global prevalence of late ANC follow-up among expectant mothers ranges from 27.5 to 88 percent in industrialised and developing countries, respectively (Wolde et al., 2018). In recent decades, pregnancy outcomes have remained stable. In the last decade, stillbirth and perinatal mortality have been on the rise (Yeoh et al., 2016). Pregnant women in developed countries recognise the value of prenatal care and regard it as a full-fledged, licenced service. However, its importance in the lives of pregnant women in poorer countries is debatable, as evidenced by low attendance (Hazmi, 2017). The risk of preterm birth, mortality, early and late neonatal mortality increased with reduction in the number of ANC visits in the USA (Manjavidze et al., 2020).

According to Edward Bbaale's research, only 17% of pregnant women begin the initial prenatal check-up on the 1st trimester, and only 47% of mothers complete at least four antenatal sessions. Timing and frequency of prenatal visits were significantly influenced by factors including maternal autonomy in making health decisions, maternal education and socioeconomic level, geographical inequalities, religious variations, access to media, timing of pregnancy, birth histories, and birth order (Bbaale, 2011). According to 2014 data, nearly half of all antenatal care attendants (44.2 percent) made their first visit during the second and third trimesters of pregnancy. Eighty-four percent of antenatal care users had four or more contacts. Inadequate service quality and being in good health were the primary reasons for non-attendance at antenatal care clinics. Non-attendance was also found to be higher in women who had an unexpected pregnancy, had little understanding of an unhealthy pregnancy, and whose husband or partner was negative about antenatal care attendance (Berhe et al., 2014).

According to a 2015 study, the majority of respondents (528, or 79 percent) lacked adequate knowledge of booking in the1st trimester and had a negative attitude toward booking in the second and third trimesters, while only 134, or 20%, perceived the intention to book in the1st trimester (Sharique et al., 2015). In 2017, a cross-sectional study of 1617 Saudi pregnant women living in Medina city was conducted to assess the level of antenatal Care awareness, and the results revealed that 74.7 percent of the participants were between the ages of 20 and 34. The majority of them (40%) held a university diploma. 80.9 percent began monitoring their pregnancies in the first or second trimester, and 80.1 percent monitored their pregnancies on a regular basis. 89.7% believed in the importance of antenatal care visits and complementary vitamins, according to 89 percent of respondents, can help to prevent some disorders during pregnancy (Bbaale, 2011).

A study was conducted in Abha, where the majority of women were aware of the importance of ANC visits, resulting in a positive attitude and practise pattern among them. More large-scale demographic studies are needed in Saudi Arabia's cities and rural areas (Alshabanah et al., 2018). A study was conducted in 2019 on 400 pregnant women (37 percent of whom were between the ages of 23 and 27). 268 (67 percent) of the women had a poor (70 percent) level of prenatal knowledge, 96 (24 percent) had an adequate (70-80 percent score), and 36 (9 percent) had a good-level of prenatal knowledge (80 percent score). 360 (90%) of the women lacked knowledge about nutrition and pregnancy weight gain. The number of prenatal care visits, location, and monthly household income all had a significant impact on antenatal knowledge scores (Khan et al., 2019).

In 2018, a cross-sectional study revealed that the majority of participants were young (under 20 years old) and had little education. The majority of them were unaware of the importance of prenatal-care, particularly the importance of early booking, investigations performed during ANC visits, and gestational danger signals (Hiba Ali Ehissan et al., 2018). There is insufficient number of women who are aware of antenatal care, particularly in Saudi Arabia, and there is lack of statistics. Thus, the main objective of this study was to assess the knowledge and awareness about antenatal care among women in Saudi Arabia.

2. METHODOLOGY

A cross-sectional study was done on females aged from 15-49 living in Saudi Arabia in the time from September to November 2021. The inclusion criteria were females between the aged of 15 and 49 who are living in Saudi Arabia and agreed to participate in the study. The exclusion criteria were females under the age of 15, female over the age of 49, not living in Saudi Arabia, males, and who did not agree to participate. The sample size was estimated using the Qualtrics calculator with a confidence level of 95%; a sample size of 384 and a margin error of 5%.

A pre-designed questionnaire was used to assess women's awareness levels regarding antenatal care. The questionnaire included demographic features such as age, education level, monthly income, job, husband’s education and the residence region. The participants were asked about the importance of antenatal care visit, time of the start antenatal care visits and barriers to utilization of antenatal care services. They were asked about changes that occur in the first and third trimester of pregnancy, danger signs of pregnancy, screening test during pregnancy and signs of labour. Knowledge of the participants about medication,

supplements, violent sports, smoking, caffeine, having pets such as cats, weight gain and stress during pregnancy, importance of follow- up, and from whom the pregnant lady can get the help and advice all were assessed.

A score of "1" was given for every correct answer and a score of "zero" was given for every wrong one. Thus, a total score of 23 was present foe antenatal care knowledge among the participants. If the participant correctly answered more than 80% of the knowledge assessment tools, the participant was considered to have good knowledge of antenatal care; if the participant correctly answered less than 80% of the knowledge assessment tools, the participant was considered to have poor knowledge of antenatal care (Kasemy et al., 2020).

Data were analyzed statistically using the SPS program version 25. To assess the relationship between variables, qualitative data was presented as numbers and percentages, and the Chi-squared test ($\chi 2$) was used. Quantitative data was expressed as mean and standard deviation (Mean ± SD) and non-parametric variables were tested using the Mann-Whitney and Kruskal Wallis tests. A p-value of 0.05 was considered as statistically significant.

3. RESULTS

According to (Table 1) shows that the mean age of studied participants was 30.22 ± 9.2 years, 97.3% had a Saudi nationality, and 69.2% of them and 44.9% of their husbands had a university education respectively. Of hem, 40.4% had a monthly income > 10000 SR 34% were house wives and 26.7% were residents of the southern region of KSA.

Table 1 Distribution of studied participants according to their demographic characters (No.948)

Variable	No. (%)
Age (mean ± SD)	30.22 ± 9.2
Nationality	
Saudi	922 (97.3)
Non- Saudi	26 (2.7)
Woman educational level	
Elementary	8 (0.8)
Intermediate	19 (2)
Secondary	227 (23.9)
University	656 (69.2)
Postgraduate	38 (4)
Husband educational level	
Not mentioned	257 (27.1)
Illiterate	1 (0.1)
Elementary	6 (0.6)
Intermediate	25 (2.6)
Secondary	156 (16.5)
University	426 (44.9)
Postgraduate	77 (8.1)
Monthly income	
< 5000 SR	288 (30.4)
5000-10000 SR	277 (29.2)
> 10000 SR	383 (40.4)
Occupation	
One of the health specialties	59 (6.2)
House wife	322 (34)
Student	278 (29.3)
Teacher	142 (15)
Other	147 (15.5)
Residence region	
Eastern	150 (15.8)
Northern	201 (21.2)

Western	144 (15.2)
Central	200 (21.1)
Southern	253 (26.7)

The most of the participants (81%) knew that folic acid is the nutritional supplement that a pregnant woman should take in the first months. The majority (78.3% knew that smoking is harmful to the pregnant woman and lead to birth of a child with less than normal weight and 90.7% disagreed that pregnant woman can take all medications without consulting a doctor. Most of them (77.4%) correctly disagreed that a pregnant woman to have a lot of caffeine, 62.8% disagreed to raise cats during pregnancy, as cats are pets that do not cause harm and 84.9% disagreed that violent sports are useful for pregnant women, as they help facilitate the birth process. About 78.3% correctly reported that signs of near birth uterine contractions with back pain and the occurrence of secretions and 94.2% reported that psychological stress is harmful to the pregnant woman.

Of them, 89.5% reported that one of the changes that occur in the1st trimester of pregnancy is the desire to vomit while feeling lazy. Of the participants, 69% reported that pregnancy causes weight gain due to water and salt retention and 93.6% mentioned that the gynaecologist helps them monitor both the fetuses and your overall health. Of them 76.6% mentioned that among the changes that occur in the third trimester are frequent urination, back pain, difficulty breathing and only 26.6% agreed to obtain medical advice from anyone, whether the mother husband, friends etc. Most of them (66.9%) mentioned the importance of antenatal booking before the 3rd month of pregnancy, 61% reported that screening of blood for infections (HIV, HBV, etc.) should be carried out during antenatal check-up and 94.4% reported that in case of any-such-problem they should report to health centre (Figure 1). The most commonly known dangerous signs of pregnancy were weak or no fetal movement (82.2%) and spotting and bleeding (76.6%) (Table2).

Table 2 Distribution of studied participants according to their response to knowledge items related to antenatal care (No.948)

Variable	No. (%)
What are the nutritional supplements that a pregnant woman takes in the first months?	
- calcium	352 (37.1)
- iron	471 (49.6)
- Folic acid	768 (81)
- Vitamin D	267 (28.1)
- iodine	106 (11.1)
Smoking is harmful to the pregnant woman and the birth of a child with less than normal weight?	
No	48 (5.1)
Don't know	158 (16.7)
Yes	742 (78.3)
A pregnant woman can take all medications without consulting a doctor?	
No	860 (90.7)
Don't know	14 (1.5)
Yes	74 (7.8)
It is okay for a pregnant woman to have a lot of caffeine?	
No	734 (77.4)
Don't know	111 (11.7)
Yes	103 (10.9)
It is okay to raise cats during pregnancy, as cats are pets that do not cause harm?	
No	595 (62.8)
Don't know	195 (20.6)

Yes	158 (16.7)
Violent sports are useful for pregnant women, as they help facilitate the birth process?	
No	805 (84.9)
Don't know	78 (8.2)
Yes	65 (6.9)
Signs of near birth uterine contractions with back pain and the occurrence of secretions?	
No	65 (6.9)
Don't know	141 (14.9)
Yes	742 (78.3)
Psychological stress is harmful to the pregnant woman?	
No	26 (2.7)
Don't know	29 (3.1)
Yes	893 (94.2)
One of the changes that occur in the1st tri-mester of pregnancy is the desire to vomit while feeling lazy?	
No	33 (3.5)
Don't know	67 (7.1)
Yes	848 (89.5)
Pregnancy causes weight gain due to water and salt retention?	
No	99 (10.4)
Don't know	195 (20.6)
Yes	654 (69)
A gynecologist who helps you monitor both the fetus' and your overall health?	
No	25 (2.6)
Don't know	36 (3.8)
Yes	887 (93.6)
Among the changes that occur in the third trimester: frequent urination, back pain, difficulty breathing?	
No	46 (4.9)
Don't know	176 (18.6)
Yes	726 (76.6)
Obtain medical advice from anyone, whether the mother husband, friends etc.?	
No	640 (67.5)
Don't know	56 (5.9)
Yes	252 (26.6)
Scheduling for pregnancy should begin before the third month of pregnancy:	
No	100 (10.5)
Don't know	214 (22.6)
Yes	634 (66.9)
During prenatal booking, blood should be checked for infections (H-I-V, H-B-V, etc.):	

No	78 (8.2)
Don't know	292 (30.8)
Yes	578 (61)
Describe the pregnancy risk signs? (You can choose more than one)	
Weak or no fetal movement.	780 (82.2)
Spotting and bleeding.	727 (76.6)
Heavy vaginal discharge.	366 (38.6)
Excessive vomiting.	239 (25.2)
Persistent swelling.	192 (20.2)
What steps should be taken in the event of a similar issue?	
Home remedies/ self-medication	34 (3.6)
Ignore it	16 (1.7)
Report to health center	898 (94.4)

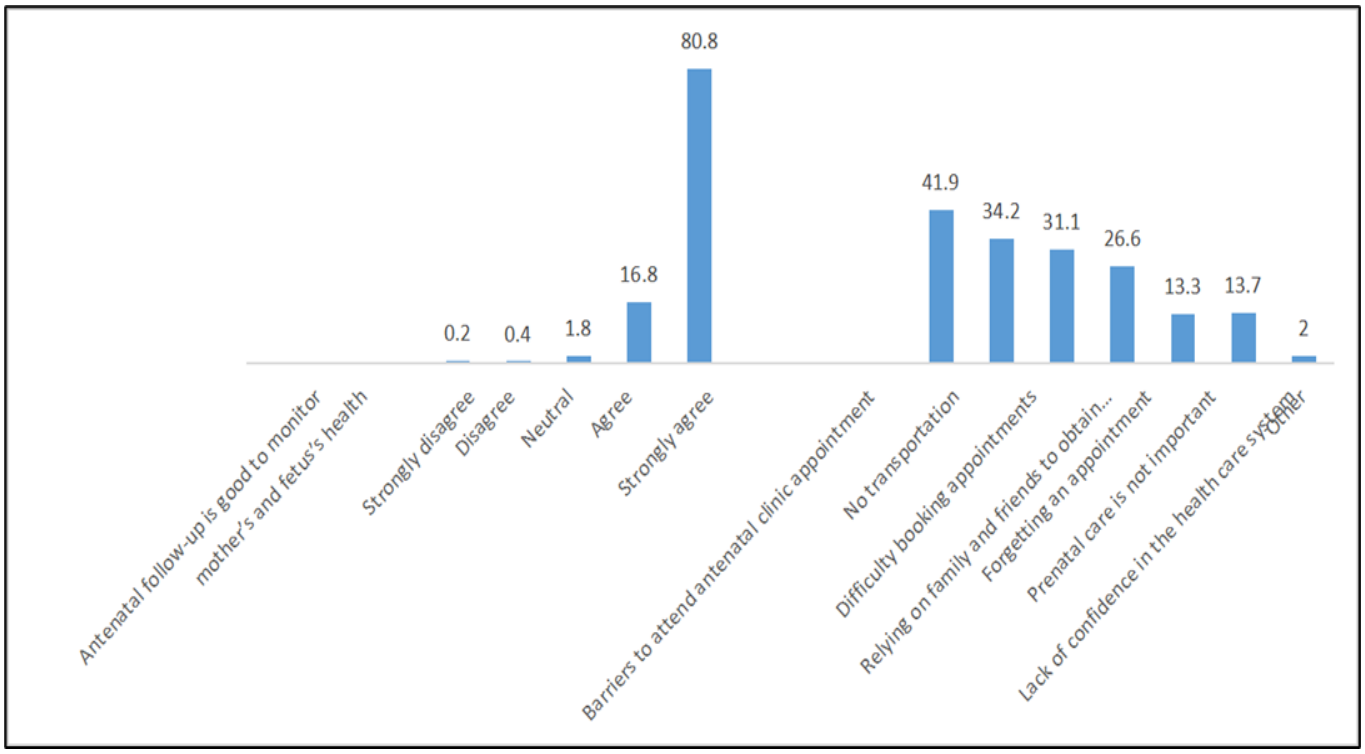

Figure 1 Percentage distribution to participants' opinion if to keep track of the health of the mother and fetus, prenatal care is beneficial and barriers to attending antenatal clinic appointment (No.948)

In table 3 that participants with older age, of Saudi nationality, with a husband of a university education, with a monthly income of 5000-10000 SR, of an occupation as a health care worker and residents of the northern region had a significant higher percent of those who had a good knowledge regarding antenatal care ($p=< 0.05$). On the other hand, a non-significant relationship was found between participants' educational level and their knowledge regarding antenatal care ($p= > 0.05$).

Table 3 Relationship between participants' degree of knowledge in prenatal-care and their demographics (No.:948)

Variable	Knowledge level		$\chi 2$	p-value
	Poor No. (%)	Good No. (%)		
Age (mean SD)	29.46 ± 9.29	32.65 ± 8.48	5.02*	< 0.001
Nationality				
Saudi	696 (75.5)	226 (24.5)	3.91	0.048
Non- Saudi	24 (92.3)	2 (7.7)		
Woman educational level				
Elementary	7 (87.5)	1 (12.5)		
Intermediate	15 (78.9)	4 (21.1)		
Secondary	181 (79.7)	46 (20.3)	4.07	0.396
University	491 (74.8)	165 (25.2)		
Postgraduate	26 (68.4)	12 (31.6)		
Husband educational level				
Not mentioned	222 (86.4)	35 (13.6)		
Illiterate	1 (100)	0 (0.0)		
Elementary	6 (100)	0 (0.0)		
Intermediate	21 (84)	4 (16)		
Secondary	109 (69.9)	47 (30.1)	34.34	< 0.001
University	296 (69.5)	130 (30.5)		
Postgraduate	65 (84.4)	12 (15.6)		
Monthly income				
< 5000 SR	246 (85.4)	42 (14.6)		
5000-10000 SR	272 (71)	111 (29)	20.61	< 0.001
> 10000 SR	202 (72.9)	75 (27.1)		
Occupation				
One of the health specialties	37 (62.7)	22 (37.3)		
House wife	239 (74.2)	83 (25.8)		
Student	238 (85.6)	40 (14.4)	27.79	< 0.001
Teacher	94 (66.2)	48 (33.8)		
Other	112 (76.2)	35 (23.8)		
Residence region				
Eastern	120 (80)	30 (20)		
Northern	119 (59.2)	82 (40.8)		
Western	120 (83.3)	24 (16.7)	49.06	< 0.001
Central	173 (86.5)	27 (13.5)		
Southern	188 (74.3)	65 (25.7)		

N.B.: * Mann Whitney test

As for Table 4 shows that participants with a university education, with a husband of a university education, with a monthly income of 5000-10000 SR, of an occupation as a health care worker and residents of the northern region had a significant higher percent of those who reported that antenatal care is important for mother (p=< 0.05). On the other hand, a non-significant relationship was found between participants' age and nationality and their opinion if antenatal care is important for mother (p= > 0.05).

Table 4 Relationship between participants' opinion if antenatal care is important for mother and their demographics (No.:948)

Variable	Antenatal care is important for mother			$\chi 2$	p-value
	No No. (%)	Don't know No. (%)	Yes No. (%)		
Age (mean SD)	30.95 ± 7.98	28.87 ± 9.87	30.23 ± 9.24	2**	0.439
Nationality					
Saudi	44 (4.8)	29 (3.1)	849 (92.1)	2.19	0.333
Non- Saudi	2 (7.7)	2 (7.7)	22 (84.6)		
Woman educational level					
Elementary	0 (0.0)	1 (12.5)	7 (87.5)		
Intermediate	1 (5.3)	1 (5.3)	17 (89.5)		
Secondary	20 (8.8)	8 (3.5)	199 (87.7)	15.74	0.046
University	22 (4.3)	21 (3.2)	613 (93.4)		
Postgraduate	3 (7.9)	0 (0.0)	35 (92.1)		
Husband educational level					
Not mentioned	4 (1.6)	10 (3.9)	243 (94.6)		
Illiterate	0 (0.0)	1 (100)	0 (0.0)		
Elementary	1 (16.7)	0 (0.0)	5 (83.3)		
Intermediate	2 (8)	2 (8)	21 (84)		
Secondary	24 (15.4)	4 (2.6)	128 (82.1)	82.2	< 0.001
University	12 (2.8)	12 (2.8)	402 (94.4)		
Postgraduate	3 (3.9)	2 (2.6)	72 (93.5)		
Monthly income					
< 5000 SR	8 (2.8)	11 (3.8)	269 (93.4)		
5000-10000 SR	6 (2.2)	9 (3.2)	262 (94.6)	17.5	0.002
> 10000 SR	32 (8.4)	11 (2.9)	340 (88.8)		
Occupation					
One of the health specialties	1 (1.7)	1 (1.7)	57 (96.6)		
House wife	28 (8.7)	12 (3.7)	282 (87.6)		
Student	9 (3.2)	10 (3.6)	259 (93.2)	18.23	0.02
Teacher	2 (1.4)	4 (2.8)	136 (95.8)		
Other	6 (4.1)	4 (2.7)	137 (93.2)		
Residence region					
Eastern	4 (2.7)	4 (2.7)	142 (94.7)		
Northern	0 (0.0)	3 (1.5)	198 (98.5)		
Western	2 (1.4)	5 (3.5)	137 (95.1)	100.97	< 0.001
Central	36 (18)	9 (4.5)	155 (77.5)		
Southern	4 (1.6)	10 (4)	239 (27.4)		

N.B.: ** Kruskal Wallis test

4. DISCUSSION

This study aimed at assessing the awareness of Saudi women about antenatal care. In this survey, the majority of participants (80.8 percent) strongly agreed that antenatal follow-up is beneficial for monitoring the health of the mother and the foetus both. In this study, there was an adequate amount of understanding of various elements of pregnancy. Folic acid is the nutritional supplement that a pregnant woman should take in the first months of her pregnancy, according to 81 percent of women. Furthermore, 78.3 percent were aware that smoking is harmful to a pregnant woman, 90.7 percent disagreed that a pregnant woman can take any

medication without consulting a doctor, 77.4 percent disagreed that a pregnant woman should consume a lot of caffeine, disagreed to raise cats during pregnancy (62.8 percent), and 84.9 percent disagreed that violent sports are beneficial to pregnant women.

Furthermore, around 78.3 percent properly identified indicators of near-birth uterine contractions with back pain and the appearance of secretions, and 94.2 percent correctly identified psychological stress as hazardous to the pregnant lady. One of the changes that occur in the1st trimester of pregnancy, according to 89.5 percent of them, is the desire to vomit while feeling sluggish. In a previous study, this high level of awareness regarding pregnancy-related risks was also discovered (Hoda Jradi, 2013). Nearly half of the women in this survey thought vitamin supplements were good for the foetus, whereas the majority agreed that cigarette smoke is hazardous for the baby.

In a study conducted in Abha, Saudi Arabia, 92.3 percent of women were aware of the necessity of ANC visits for foetal growth stages, and 88 percent were aware of the importance of ANC visits for lowering maternal mortality rates. 71.7 percent said they had enough understanding about the danger symptoms and difficulties of pregnancy, and 88 percent said it was important to schedule, follow up, and deliver in the same location that they had booked (Alshabanah et al., 2018). Approximately 60% of participants in a previous study (Alshabanah et al., 2018) said they would prefer to learn about all of the suggested topics during the first trimester (pregnancy symptoms, foetal developmental stages, dietary regimens, danger signs and symptoms during pregnancy, dealing with complications like nausea and vomiting, and the do's and don'ts during pregnancy). During their second trimester, women reported a preference for learning about post-partum exercises, followed by a preference for learning about fetal developmental stages and signs of danger regarding a miscarriage (Alshabanah et al., 2018).

Pregnancy induces weight gain due to water and salt retention, according to the majority of the women in this study (69 percent). In Saudi Arabia, excessive gestational weight gain is frequent among pregnant women (Ali et al., 2020). This is due to a lack of understanding about this unique pregnancy health risk (Ali et al., 2020). According to our research, women in Saudi Arabia are aware that pregnancy causes weight gain. Another outcome of our survey was that 84.9 percent of respondents disagreed that violent sports are beneficial to pregnant women because they aid in the delivery process.

Another study found that after getting pregnant, women cease exercising, which may explain our findings because they are scared of violent exercise (Wolde et al., 2018). Women in Saudi Arabia believe that eating is more important than exercising on a regular basis (Daajani et al., 2020). Only 24.1 percent of the participants in the study had a solid understanding of prenatal care. A prior study on pregnant women visiting Baghdad's basic health care institutions was conducted in 2021. According to the survey, 76.8% returned for a check-up. The overall knowledge score was low (16.73.3), with 75.8% of respondents having insufficient knowledge, 23.2 percent having acceptable knowledge, and only 1% having great knowledge. The findings of the study revealed a high link between knowledge level and prenatal care scores (Hiba Ali Ehissan et al., 2018).

A survey done among pregnant women at different primary health care centres in Riyadh, Saudi Arabia, indicated the same low level of knowledge about prenatal care as the current study (Ali et al., 2020). Participants with a husband with university education, a monthly income of 5000-10000 SR, and a job as a health care worker had a much greater percentage of those who had strong knowledge about antenatal care, according to one of the study's findings and a bigger percentage of respondents said antenatal care is crucial for the mother. This finding is consistent with a recent study that found a link between getting regular prenatal care checkups during pregnancy and having a high education level (Hazmi, 2017).

According to the findings, the majority of women believe that supplementing their diet during pregnancy reduces the risk of certain pregnancy-related illnesses (Hoda Jradi, 2013). Women's age also was found to influence their degree of knowledge in a previous study, where other factors had no effect on the amount of knowledge (Hoda Jradi, 2013). Lack of transportation, difficulties booking visits, relying on family and friends for information, and forgetting an appointment were the most common barriers to antenatal care identified in this study. A prior Saudi study looked into the barriers to using antenatal care services at primary health care institutions in Jeddah. Women who had insufficient antenatal care visits faced higher structural impediments than women who received enough care visits, according to the study. The most common structural impediments were uncomfortable clinical hours and dissatisfaction with earlier care. The most prevalent stumbling block, on the other side, was being unable to schedule an appointment. The most common personal barriers were fear of examinations and medical testing, as well as transportation concerns. Family problems, on the other hand, were the least common personal barrier. The fact that women "understood the staff's communication," that is, that the staff communicated effectively, was the most powerful facilitator in antenatal care visits in this study.

In Abha, a previous Saudi study was conducted to analyse pregnant women' knowledge, attitudes, and practises regarding prenatal care. The majority of the individuals in this study had a good understanding of the necessity of ANC visits, which resulted in a positive attitude and practise pattern. The majority of the women in the study were aware of the value of ANC visits for providing women with vitamins and folic acid, as well as providing information on breast feeding and postpartum care, proper

signals of labour, and maintaining women's and children's health (Alshabanah et al., 2018). The majority of participants in this study (66.9%) believe that antenatal appointments should be made before the third month of pregnancy. This is in line with findings from a prior study conducted in Madianah, Saudi Arabia (Hazmi, 2017). According to the findings, more than half of women understand the significance of the first visit and the value of continuing follow-up at the same location (Hazmi, 2017).

Limitations

The use of a cross sectional study design is a limitation of the current study without revealing the casual relationships; this design could reveal the association between variables.

5. CONCLUSION

This study observed a good knowledge of the participant women regarding the importance of folic acid for pregnant woman in the first months, that smoking is harmful to the pregnant woman and lead to birth of a child with less than normal weight and 90.7% pregnant woman cannot take all medications without consultation. Most of them know that a pregnant woman should not have a lot of caffeine, raise cats during pregnancy or do violent sports. Most of them (78.3%) correctly knew signs of near birth as uterine contractions with back pain and the occurrence of secretions and 89.5% knew that the desire to vomit while feeling lazy are changes in the1st trimester and frequent urination, back pain and difficulty breathing present in the third trimester. Most of them (66.9%) mentioned the importance of antenatal booking before the 3rd month of pregnancy, and 94.4% reported that in-case of any such-problem they should report to health center. Most of the participants strongly agreed that prenatal care is beneficial for monitoring the health of the mother and fetus. The most common Barriers to antenatal care were lack of transportation, difficulty booking appointments, relying on family and friends to obtain information and forgetting an appointment. Most of the participants (91.9%) agreed that prenatal care is important to mother and only 24.1% had a good knowledge level regarding antenatal care. Participants with older age, of Saudi nationality, with a husband of a university education, with a monthly income of 5000-10000 SR, health care worker and residents of the northern region had a significant higher percent of having a good knowledge regarding antenatal care. While participants with a university education, with a husband of a university education, with a monthly income of 5000-10000 SR, are as a health care worker and residents of the northern region had a significant higher percent of those who reported that antenatal care is important for mother. There is a necessary to raise awareness of Saudi women about antenatal care services and compact barriers that prevent them from the usage of these survive.

Ethical approval

The study was obtained from the research ethics committee of Taif University, Saudi Arabia with (Ref. No. REC. 2021-11-566).

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This study has not received any external funding.

Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

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