

## Original Research Article

# Psycho-social factors affecting antenatal care services utilization at the Ministry of Health's primary health care centers in Jeddah, Kingdom of Saudi Arabia, 2017-2018: an analytical cross-sectional study

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## ABSTRACT

**Background:** This study aimed to explore the psychosocial factors affecting the utilization of antenatal care (ANC) services.

**Methods:** This was an analytical cross-sectional study carried-out in the 4 main MOH maternity hospitals in Jeddah. The study sample included 2 groups: 80 women with inadequate ANC attendance and 159 with adequate ANC attendance. We applied probability proportional to size sampling technique. The outcome of this study was ANC attendance (adequate or inadequate). Independent variables included: age, nationality, educational level, occupation, monthly income, the dependent variables included: the number of ANC visits.

**Results:** The utilization findings of this study revealed that 88 women out of 239 women had not fully used the health services provided to them (underutilization) and the utilization rate was 66.5%. Approximately one-half of the women with inadequate ANC had birth intervals of less than 2 years. Three-quarters of them reported that they did not plan their current pregnancies, and nearly two-thirds of them had high levels of stress. Logistic regression analysis indicated that inadequate ANC attendance was predicted by past negative experiences related to ANC attendance ( $p=0.001$ ) (OR=0.183 CI=0.065-0.513).

**Conclusions:** The most significant identified barriers to utilization of ANC services were high stress, previous negative ANC experience, unplanned pregnancy, and short birth intervals. Furthermore, women who had adequate ANC visits were more likely to have planned pregnancies and be aware of available ANC services.

**Keywords:** Psychosocial factors, Utilization, Antenatal care

## INTRODUCTION

The World Health Organization (WHO) advises women to have antenatal care (ANC) visits during her pregnancy minimally four visits. Inadequate maternity care during pregnancy and childbirth is a leading cause of maternal morbidity and mortality.<sup>1,2</sup> Worldwide, in 2015, more than 300,000 women died from pregnancy and childbirth-

related complications.<sup>1</sup> The Ministry of Health (MOH) of the Kingdom of Saudi Arabia (KSA) reported a maternal mortality ratio (MMR) of 12 deaths per 100,000 live births in KSA in 2015. The proportion of maternal deaths among women of reproductive age was 1.6%.<sup>2</sup> The percentage of abnormal deliveries was 23.5% for cesarean sections and 20.9% for all deliveries. The stillbirth rate was 12.9 stillbirths per 1,000 live births in

MOH's hospitals, while 3.9% of the total live births were preterm.<sup>3</sup> These figures may indicate that pregnant women in KSA are not receiving the benefits of ANC offered at primary health care centers (PHCCs). The benefits of ANC include early detection and management of health risks and complications during pregnancy. This aims to prevent any unfavorable maternal and neonatal outcomes and is mainly the responsibility of the MOH-PHCCs.

According to MOH 1437H (2016) statistics, less than one-fourth (22.6%) of women in Jeddah received the recommended ANC during pregnancy at PHCCs.<sup>4</sup> This percentage is much lower compared with other regions in KSA. For example, in Riyadh, 80% of pregnant women undertook all 4 ANC visits at PHCCs.<sup>5</sup> The percentage is also lower than the global average of 50% reported by United Nations Children's Fund.<sup>6</sup> Moreover, ANC has a significant role in the early detection and management of problems arising during pregnancy to prevent potential complications. Therefore, late initiation or lack of ANC for pregnant women increases the risk for the mother and fetus, further increasing the chances of maternal and neonatal mortality and morbidity.

Antenatal care (also known as prenatal care) is defined as "the routine health control of presumed healthy pregnant women without symptoms (screening), in order to diagnose diseases or complicating obstetric conditions without symptoms and to provide information about lifestyle, pregnancy, and delivery."<sup>7</sup> Regular contact with a health care provider during pregnancy is essential to the health of women and their future children. Therefore, the ANC's role is to detect and manage maternal health conditions affecting the mother's health and the health of the fetus. Antenatal care services include screening and treatment of infections such as rubella, toxoplasmosis, syphilis, hepatitis B virus, and the human immunodeficiency virus. Other services include screening and managing anemia, diabetes, hypertension, pre-eclampsia, and eclampsia. These services often save fetal lives. Ultrasound imaging is provided for pregnant women in the antenatal period to monitor fetal growth and amniotic fluid, while screening for fetal anomalies. Therefore, proper use of ANC services will contribute to target 1, goal 3 of the United Nations' 2030 Agenda for Sustainable Development. Target 1, goal 3 states the following: "By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births."<sup>8</sup>

The World Health Organization developed a new model of ANC in 2001. However, the model only includes the basic components of ANC, targeting pregnant women with low risk.<sup>9</sup> The model also includes basic visits that must be initiated before 12 weeks of gestation. The gestational age for the second visit is at 26 weeks, the third visit is at 32 weeks, and the fourth visit is at 38 weeks.<sup>10</sup> Late initiations or a decreased number of ANC visits can lead to serious outcomes during and after pregnancy. Furthermore, pre-eclampsia, anemia, perinatal death, premature births, intrauterine growth retardation,

low birth weight, chorioamnionitis, maternal deaths, and cerebral malaria are among the complications that can occur due to an inadequate number of ANC visits.

Factors affecting ANC coverage and utilization include sociodemographic characteristics and obstetric and reproductive history. Other factors may also act as barriers, motivators, or facilitators affecting availability, accessibility, and use of ANC services. In 2011, the Saudi MOH introduced the Mother and Child Health Passport Project. This program aimed to ensure the necessary follow-up care of both mother and child, by monitoring the mother's health condition during pregnancy and the child's subsequent health progress until the age of 6 years.<sup>11</sup> However, the above statistics indicate that many women are still encountering problems during and after pregnancy, suggesting that there may be some barriers to such services.

We interested in studying the psychosocial factors and its effects on the utilization of ANC services because MOH in KSA provides ANC services free to the women but, as we noted that some women do not go to the MOH-PHCCs because of some psychosocial factors. There is no doubt on the importance of the psychosocial factors as determinant of health. Up to our knowledge there are limited researches conducted in KSA dealing the association between the psychosocial factors and the utilization of the ANC services.

Therefore, the aim of this study was to explore the psychosocial factors affecting the utilization of ANC services at the MOH-PHCCs in Jeddah, KSA.

## METHODS

This was an analytical cross-sectional, hospital-based study carried out from November 2017 to March 2018 in the 4 main MOH hospitals in Jeddah, KSA. These included the functioning hospitals with maternity departments namely: Al Musadiya Maternity and Children's Hospital, East Jeddah General Hospital, King Abdul-Aziz Hospital (Mahjer), and Al-Thagher Hospital. The study sample included Saudi women and non-Saudi women who were eligible to receive health care services in governmental PHCCs. We excluded women from other MOH hospitals, women referred from the private hospital/clinic, and women who were not willing to participate in the study. We divided the participants into 2 groups: women with inadequate ANC attendance (less than 4 ANC visits) and women with adequate ANC attendance (4 visits or more at MOH-PHCC that began in the second trimester [13-26 weeks' gestation]). The sample size was estimated using the StatCalc function of Epi Info software version 7.1.4.0 (Centers for Disease Control and Prevention, Atlanta, GA, USA), and was calculated according to the prevalence from a similar previous study.<sup>16</sup> we used probability proportional to size as a sampling technique strategy by calculating the monthly average deliveries per each hospital from January to December last year, then we calculated the

percent of deliveries divided by the sample size, then we calculated the required number of women per each hospital accordingly.

The sample constituted 239 women divided into 2 groups: 80 women with inadequate ANC attendance and 159 women with adequate ANC attendance. The participants were selected from the 4 hospitals by applying probability proportional to size sampling strategy. Face-to-face interviews were conducted to collect data from women who had recently given birth based on a structured questionnaire to identify the psychosocial factors affecting utilization of ANC services. Several items on the questionnaire were (with permission) modified versions of items on a questionnaire previously developed by Heaman and colleagues.<sup>12</sup> The outcome (dependent variable) of this study was ANC attendance (adequate or inadequate). The independent variables included stress (which defined operationally as any factor that causes tension physically or mentally), child birth interval (the space between each pregnancy), knowledge of availability of health services, planning of the current pregnancy (women plan, and she know she is pregnant), and negative attitude towards pregnancy. To measure stress, the questionnaire included questions from Cohen's Perceived Stress Scale (PSS-10), which includes question items on a 5-point Likert scale ranging from 0 ("never") to 4 ("almost always"). The PSS-10 score ranges between 0 ("low stress level") and 40 ("high stress level"). High perceived stress level was determined by a score of 20 or higher.<sup>13</sup> Five female intern volunteer doctors were recruited to participate in the data collection and interviewing of women. They were working in the same selected hospitals. They were first trained by the principal researcher on taking informed consent procedure, ensuring safety and convenience do-no-harm principle, data collection tool (proper filling of the questionnaire forms), and interviewing techniques to reduce the amount of variability.

### **Statistical analysis**

Data analysis was performed using SPSS version 21 (IBM, Armonk, NY, USA). Both descriptive and inferential statistics were conducted. Statistical significance was set at  $p$  value  $\leq 0.05$ . Distributions were summarized using descriptive statistics and were presented in frequency tables. Categorical variables were summarized as frequencies and proportions (percentages). Mean values and corresponding standard deviation (SD) values were measured to summarize continuous variables. Comparisons were presented in 2-way frequency tables to compare distributions of the outcome variable (adequacy of ANC attendance) in groups defined by the exposure variable (barrier factors). Chi-squared and Fisher's exact test were applied for categorical data. Logistic regression analysis was used for modeling the relationships between outcome (inadequate or adequate ANC attendance) and selected factors. Moreover, odds ratios (OR), 95% confidence interval (CI), and significance level ( $p$  value) were reported accordingly.

### **Ethical approval**

Clearance to conduct the study was first obtained from the National Committee of Bio-Ethics in KSA (number H-02-J-002), along with approval from the MOH's Directorate of Health Affairs - Jeddah (number A00491). This study was conducted in accordance with the Declaration of Helsinki. Prior written informed consent was obtained from the participants before any information was collected.

### **RESULTS**

In total, 1,127 women presenting for delivery in the obstetrical wards of the 4 selected hospitals between November 2017 and March 2018 were assessed for eligibility using screening questions. Of the women approached for the study, 239 were included and 888 were excluded and the response rate was 100%. To facilitate comparability, the women were divided into 2 groups; 80 women had less than the 4 recommended ANC visits (inadequate ANC attendance group), and 159 women had 4 or more ANC visits as per the MOH's Mother and Child Health Passport Project (adequate ANC attendance group). The utilization findings of this study revealed that 159 women out of 239 women had fully use the health services provided to them (underutilization) and the utilization rate was 66.5%.

### **Sociodemographic features of the participants**

The mean age of the women was 30.5 years (SD 05.5), and most were Saudis (200 Saudi women [83.7%] compared with 39 [16.3%] non-Saudi women). Moreover, all the women were residents of Jeddah, and most of them (86.7%) had intermediate school education and above. More than three-fourths of the women were unemployed. The family's monthly income was less than 5,000 Saudi Riyal (SAR) in around 40.6% of women, and between 5,000 – 9,999 SAR in another 40.6%. The remaining had a monthly income of 10,000 SAR or above. Regarding the distribution of the included women according to the hospitals we found that Al-Musadiya Hospital involved most of the participant and more than half of them, whereas Al-Thagur Hospital constituted the least one with just 15 women (Table 1). According to probability proportional to size sampling technique strategy, we calculated the hospital capacity and women visits for each hospital and obtained the required number of women accordingly.

### **Psychosocial barriers affecting utilization of ANC services**

With regard to childbirth interval, near one-half of women with inadequate ANC had birth intervals of less than 2 years. Moreover, approximately one-quarter of the group with inadequate ANC attendance did not know there was an existing health service dedicated to pregnant women at MOH-PHCC. These women were 46% less

likely to have adequate ANC attendance than the women who knew that ANC was available at the MOH-PHCC. We also found that three-quarters of the women with inadequate ANC (16.3% of all women) reported that they

did not plan their current pregnancies. Moreover, the odds of having an inadequate number of ANC visits was more than double compared with the odds of having the adequate recommended number of ANC visits (Table 2).

**Table 1: Sociodemographic characteristics distribution of the included women (n=239).**

Characteristic	Frequency (%)
<b>Age in years (mean±SD)</b>	30.5±05.5
<b>Nationality</b>	
Saudi	200 (83.7)
Non-Saudi	39 (16.3)
<b>Educational level</b>	
Illiterate	07 (02.9)
Able to read and write - primary school	25 (10.5)
Intermediate or high school	117 (48.9)
University or above	90 (37.7)
<b>Occupation</b>	
Unemployed/housewife	187 (78.3)
Student	16 (06.7)
Government employee	23 (09.6)
Non-government employee	12 (05.0)
Self-employed	01 (0.4)
<b>Monthly income of family (SAR)</b>	
<5,000	97 (40.6)
5,000 –9,999	97 (40.6)
10,000–14,999	30 (12.6)
≥15,000	15 (06.2)
<b>Hospital name</b>	
Al Musadiya	136 (56.9)
King Abdul-Aziz	59 (24.7)
East Jeddah	29 (12.1)
Al-Thagur	15 (6.3)

**Table 2: Comparison between the two groups of participants based on selected factors related to history of pregnancy and ANC (n=239).**

Factor	Group of participants, N (%)	
	Inadequate ANC	Adequate ANC
<b>Birth interval</b>		
Less than 2 years	35 (43.8)	42 (26.4)
More than 2 years	45 (56.3)	117 (73.6)
<b>Did you plan this pregnancy?</b>		
Yes	20 (25.0)	68 (42.8)
No	60 (75.0)	91 (57.2)
<b>Were you aware of the ANC services available?</b>		
Yes	62 (77.5)	159 (100)
No	18 (22.5)	0 (00.0)
<b>Have you not undertaken ANC visits because of stress?</b>		
Yes	20 (25)	18 (11.3)
No	60 (75)	141 (88.7)
<b>Total</b>	80 (100)	159 (100)

Furthermore, we found that not feeling well and being under stress were 2 of the most prevalent psychosocial barriers to the utilization of ANC services.

Approximately 16% of all women reported difficulty in attending ANC visits because of their stress (Table 3). Moreover, nearly two-thirds of the women with

inadequate ANC attendance had high levels of stress according to the PSS-10 (Table 4).

Negative attitudes toward pregnancy or ANC showed different proportions in this study. Approximately one-third of the women were unaware of the ANC services provided at the MOH-PHCC. More than one-quarter of

the women believed that they could take care of themselves while they were pregnant. One-fifth of the women felt that they did not need ANC. One-fifth of the women did not know they were pregnant. More than one-fifth of the women believed that ANC services were not needed. For nearly one-quarter of the women, their pregnancy was unplanned (Table 5).

**Table 3: Psychosocial barriers affecting ANC attendance (n=239).**

Study Variables	Yes	No
	N (%)	N (%)
Not feeling well	63 (26.4)	176 (73.6)
Being under stress	38 (15.9)	201 (84.1)
Unable to think clearly	21 (08.8)	218 (91.2)
Personal problems	18 (07.5)	221 (92.5)
Family problems	13 (05.4)	226 (94.6)
Marital problems	13 (05.4)	226 (94.6)
Physical abuse by spouse	03 (01.3)	236 (98.7)

**Table 4: Stress levels of women with inadequate ANC attendance according to the PSS-10 (n=80).**

Stress level	Frequency	Percentage (%)	Cumulative percentage
Low stress	31	38.8	38.8
High stress	49	61.3	100.0
Total	80	100.0	

PSS-10: Perceived stress scale.

**Table 5: Negative attitudes toward pregnancy and ANC (n=239).**

Women's reasons for delaying or not receiving ANC	Inadequate ANC	Adequate ANC
	N (%)	N (%)
Unaware that ANC services were available at the MOH-PHCC	66 (29.9)	155 (70.1)
Believed they could take care of themselves during the pregnancy	65 (27.3)	174 (72.7)
Did not think they needed ANC	49 (20.6)	190 (79.4)
Unaware of being pregnant	47 (19.8)	192 (80.2)
The pregnancy was unplanned <sup>†</sup>	36 (23.8)	115 (76.2)
Forgot the appointments	36 (15.1)	203 (84.9)
Dissatisfaction with the care at the MOH-PHCC <sup>‡</sup>	35 (14.8)	201 (85.2)
Got advice from family, friends, and others	31 (13.0)	208 (87.0)
Did not want people to know they were pregnant	20 (08.4)	219 (91.6)
Negative ANC experience at the MOH-PHCC <sup>§</sup>	19 (09.5)	180 (90.5)

MOH-PHCCs: Ministry of Health Primary Health Care Centers; <sup>†</sup>Excluded women who had planned their pregnancy; <sup>‡</sup>Excluded women who did not know they were eligible; <sup>§</sup>Excluded women for whom it was their first baby.

**Table 6: Logistic regression predicting the adequate ANC visits and psychosocial factors (n=239).**

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for Exp (B)	
							Lower	Upper
Birth interval	-0.470	0.324	2.104	1	0.147	0.625	0.331	1.179
Pregnancy Planned	0.652	0.342	3.637	1	0.057	1.919	0.982	3.751
Negative ANC experience	-1.697	0.525	10.439	1	0.001 <sup>†</sup>	0.183	0.065	0.513
Constant	0.785	0.236	11.044	1	0.001	2.193		

C.I.: confidence interval; <sup>†</sup>Significant at  $p \leq 0.05$ .

A logistic regression was performed to determine the relationship between the outcome (inadequate or adequate ANC attendance) and independent variables related to the history of pregnancy and ANC (birth interval, planning of

pregnancy and negative experiences during pregnancy). This analysis revealed that negative experiences during pregnancy predicted ANC visits ( $p=0.001$ ) (OR=0.183 CI=0.065-0.513), while short birth intervals ( $p=0.147$ )

(OR=0.625 CI=0.331-1.179) and unplanned pregnancies (p=0.057) (OR=1.919 CI=0.982-3.751) were not considered as predictors (Table 6).

## DISCUSSION

Several factors were found to be significant barriers to ANC utilization among the women at MOH-PHCCs in Jeddah, KSA. Negative experiences during pregnancy related to ANC visits found to significantly increase the likelihood of not attending a minimum of 4 ANC visits during pregnancy and these findings are in accordance with previous study.<sup>14</sup> While, other psychosocial factors such as unplanned pregnancy, short birth interval, lack of knowledge about ANC and high levels of stress affect the adequacy of the ANC visits and hence the utilization of the health services and these findings are consistent with a similar study.<sup>15</sup> With regard to childbirth interval, approximately one-third of all women had a birth interval shorter than 2 years and these which reflects the difficulties in follow up and adequacy of ANC visits and hence low level of utilization. Moreover, negative attitudes and lack of knowledge regarding pregnancy or ANC, particularly lack of knowledge about ANC services available to pregnant women and unplanned pregnancy, significantly increased the odds of having an inadequate number of ANC visits at MOH-PHCCs. A systematic review of barriers related to ANC found negative attitudes toward health care to be one of the greatest barriers to ANC utilization.<sup>16</sup> Previously, a study conducted in Saudi Arabia also found that knowledge and perceptions regarding the benefits of ANC were major factors in the utilization of ANC services.<sup>17</sup> In addition, a considerable number of women were not aware of the existing ANC services at MOH-PHCC. All of these women had inadequate ANC attendance and were less likely to have an adequate number of ANC visits compared with the women who knew about the available services. Unplanned pregnancy had a negative effect on utilization of ANC, and women who had not planned their current pregnancies were found to significantly avoid ANC visits. Furthermore, women who had previously experienced high-stress ANC visits at MOH-PHCC were found to have more difficulty making ANC visits compared with those whose previous visits had been low-stress.

Limitation of this study included two points: women were interviewed at hospitals about past events that took place during their pregnancies. Some of the women had difficulty remembering the events accurately, meaning that results may be subject to recall bias. The other limitation is that variability in the provision of services in PHC clinics which may interfere with the reliability of the results.

## CONCLUSION

The most significant barriers to utilization of ANC services were high stress, previous negative ANC

experience, unplanned pregnancy, and short birth interval. Moreover, lack of knowledge regarding the availability of ANC services at MOH-PHCC was the most negative attitude factor influencing the women's ANC visits. We recommend developing and implementing programs that raise community awareness about PHC eligibility and the availability of ANC services. Such services should also provide psychological counseling services to women at all PHCCs to address their stress and other psychological problems. Moreover, the MOH needs to expand family planning services rooted in ANC and prenatal care to include more education, medications, and training of health care providers. This study will give directions for future research in the field of health services utilization and the optimum use of these services.

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