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Barriers to and Facilitators of Antenatal Care Service Use at Primary Health Care Centers in Jeddah, Saudi Arabia: A Cross-Sectional Study

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ABSTRACT

Objective: *This study aimed to identify the barriers to and facilitators of antenatal care service use in primary health care centers in Saudi Arabia.* ***Methods:*** *A cross-sectional hospital-based study was conducted. Participants were 239 women (mean age: 30.43 years; standard deviation: 5.49) who had recently delivered. Participants were divided into two groups: Group 1 comprised 80 women with inadequate antenatal care visits and Group 2 comprised 159 women with adequate visits. A structured questionnaire was used to compare barriers and facilitators impacting ANC visit adequacy.* ***Results:*** *Women with inadequate visits experienced more structural and personal barriers than women with adequate visits. The total scores for the structural barriers were 56.3% versus 25.8% ($p<0.001$) whereas the total scores for personal barriers were 75% versus 35.8% ($p<0.001$). The most prevalent structural barriers for both groups were inconvenient clinic hours (31.3% versus 21.4%; $p=0.112$) and dissatisfaction with previous care (23.8% versus 10.1%; $p=0.007$). The most prevalent personal barriers were fear of examination and medical tests (26.3% versus 14.5%; $p=0.034$) and transportation problems (33.8% versus 7.5%; $p<0.001$). The most frequently mentioned facilitator was effective staff communication (80.2%).* ***Conclusion:*** *Several barriers are associated with antenatal care service use. This study contributed to identifying these factors to improve clinical practice. Efforts should be made to arrange convenient clinic hours, reduce waiting times and easily secure appointments, provide transportation, decrease patient fear of examinations and medical tests and patient stress, and increase patient knowledge about existing services and supports.*

Keywords: Health service use, Ministry of Health, Pregnancy, Structural barrier, Personal barrier

INTRODUCTION

Antenatal Care (ANC) provides important healthcare services to pregnant women in terms of disease prevention, health promotion, and disease screening and diagnosis. When ANC is applied with appropriate practices and along recommended timeframes, it can save lives [1]. According to the World Health Organization (WHO), pregnant women should attend at least four ANC appointments [2]. In low-and middle-income settings, evidence shows an association between reduced ANC visits and increased risk of perinatal mortality [3]. In 2016, the Ministry of Health (MOH) of

the Kingdom of Saudi Arabia (KSA) declared that only about one-fourth (22.6%) of women made four ANC visits to Primary health care centers (PHCCs) in Jeddah [4]. This rate is much lower than the international rate of 65% documented by the United Nations Children's Fund [5]. These data point to the underuse of ANC services provided by PHCCs in the KSA.

"Antenatal care" (sometimes known as "prenatal care") is defined as "the care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy". WHO introduced a new model of ANC in 2001 that includes basic ANC services and focuses on low-risk pregnant women [6]. The model advises starting visits early: the first visit should be before 16 weeks, the second visit between 24-28 weeks, the third visit between 30-32 weeks, and the fourth visit between 36-38 weeks [7]. Factors affecting ANC coverage and use include barriers or facilitators affecting availability, accessibility, and use of ANC services. MOH introduced the Mother and Child Health Passport Project in 2011, aiming to provide the necessary follow-up with respect to maternity and childcare until the child is six years old [8]. This study focuses on factors affecting ANC service use because there is a gap between free ANC services provided by MOH and the use of these services. By identifying factors that affect the use of ANC services, MOH decision-makers may be able to understand the context and develop evidence-based policies and beneficiary-focused interventions to overcome barriers and emphasize existing facilitators to improve the use of ANC services at MOH-PHCCs. This study targeted the use of ANC services at MOH-PHCCs in Jeddah, KSA. We aimed to compare the barriers and facilitators affecting use of these services reported by adequate and inadequate ANC groups.

MATERIALS AND METHODS

Setting and Participants

This was a cross-sectional hospital-based study conducted from November 2017 to March 2018 at four main MOH hospitals in Jeddah: Al Musadiya Maternity and Children's Hospital, East Jeddah General Hospital, King Abdul-Aziz Hospital (Mahjer), and Al Thagher Hospital. The sample size was calculated using the StatCalc function of Epi Info software version 7.1.4.0 [9,10] and based on an estimation of proportions from a previous study [11]. A total of 239 women who had recently delivered (i.e., who had delivered within the last week and were still in the hospital when interviewed) were divided into two groups. Group 1 comprised 80 women with inadequate ANC visits (i.e., less than four visits). Group 2 comprised 159 women with adequate ANC visits, that is, who followed WHO's recommended ANC guidelines for MOH-PHCCs from their second trimesters (13-26 weeks' gestation) and completed at least four ANC visits. We applied probability proportional to the size sampling strategy to select participants from the four hospitals.

Measures

We used a structured questionnaire originally developed by Johnson, et al. [11] and later modified by Heaman, et al. [12] containing 60 items. We modified the original questionnaire and removed non-applicable and culturally sensitive questions from the questionnaire (with the authors' permission) to suit this study. We applied content validation to the questions by experts to yield a final draft of the questionnaire. The questionnaire comprised closed-ended questions measuring demographic characteristics, such as age, occupation, nationality, educational level, socioeconomic status, barriers and facilitators. We conducted direct interviews with the participants. Next, we summarized the data and categorized the responses into Yes/No responses to accordingly assess barriers and facilitators.

Ethical Considerations

Clearance to conduct this study was obtained from the National Committee of Bio-Ethics in KSA (Number H-02-J-002) and MOH's Directorate of Health Affairs-Jeddah (Number A00491). Written informed consent was obtained from the participants.

Statistical Analysis

Data analysis was performed using SPSS version 21 (IBM, Armonk, NY, USA). Data were summarized using descriptive statistics and presented in frequency tables. Categorical variables were summarized as frequencies and proportions (percentages), while means and standard deviations (SD) were measured to summarize continuous variables. Comparisons between the two groups were presented to compare distributions of the outcome variable

(adequacy of ANC visits) affected by the exposure variables (barrier factors) by using a Chi-squared test; 95% confidence intervals were reported accordingly and p-values ≤ 0.05 were considered statistically significant.

RESULTS

Table 1 shows the characteristics of the participants. Their mean age was 30.43 years (SD=5.49). Most participants (200; 83.7%) were Saudis; 39 (16.3%) were non-Saudis eligible for care at MOH facilities. Of all women, 13.4% were illiterate/had only attended primary school; meanwhile nearly half of them had received an intermediate or high school education. More than three-fourths of the participants were unemployed or housewives. Only 18.8% reported high socioeconomic status, while 40.6% reported low and moderate socioeconomic status.

Table 1 Characteristics of the participants

Characteristics	Inadequate ANC visits	Adequate ANC visits	Total
	n=80 (33.5%)	n=159 (66.5%)	n=239 (100%)
Age (years)			
Mean age (SD)	30.29 (5.54)	30.57 (5.48)	30.43 (5.49)
Nationality			
Saudi	65 (81.3%)*	135 (84.9%)	200 (83.7%)
Non-Saudi	15 (18.8%)	24 (15.1%)	39 (16.3%)
Education			
Illiterate/Primary school	14 (17.5%)	18 (11.3%)	32 (13.4%)
Intermediate or high school	37 (46.3%)*	80 (50.3%)	117 (49%)
University or higher	29 (36.3%)*	61 (38.4%)	90 (37.7%)
Occupation			
Unemployed/housewife	66 (82.5%)	121 (76.1%)	187 (78.2%)
Student	5 (6.3%)*	11 (6.9%)	16 (6.7%)
Government employee	7 (8.8%)*	16 (10.1%)	23 (9.6%)
Non-government employee	2 (2.5%)	11 (6.9%)	13 (5.4%)
Socioeconomic status			
Low	39 (48.8%)	58 (36.5%)	97 (40.6%)
Moderate	28 (35%)	69 (43.4%)	97 (40.6%)
High	13 (16.3%)	32 (20.1%)	45 (18.8%)

ANC: Antenatal Care; SD: Standard Deviation; *Percentages might not total 100% because of rounding

Our results showed that women with inadequate ANC visits faced more structural barriers than women with adequate visits. The total scores for the structural barriers were (56.3% versus 25.8%; p<0.001). The most prevalent structural barriers were inconvenient clinic hours (31.3% versus 21.4%; p=0.112) and dissatisfaction with previous care (23.8% versus 10.1%; p=0.007). On the other hand, the least prevalent barrier was being unable to get an appointment (8.4% in both groups). The analysis of the differences in proportions of structural barriers between groups with inadequate and adequate ANC visits revealed statistically significant differences for being "unable to get an appointment" (p=0.046), "MOH-PHCC was far away" (p<0.001), "dissatisfied with previous care" (p=0.007), and "did not like the attitude of the staff" (p=0.007), as illustrated in Table 2.

Table 2 Possible structural barriers to use of antenatal care services in primary health care centers of the Ministry of Health

Barriers		Inadequate ANC visits	Adequate ANC visits	Total	p-value
		n=80 (33.5%)	n=159 (66.5%)	n=239 (100%)	
The clinic hours were not convenient	Yes	25 (31.3%)	34 (21.4%)	59 (24.7%)	0.112*
	No	55 (68.8%)	125 (78.6%)	180 (75.3%)	
They were dissatisfied with previous care	Yes	19 (23.8%)	16 (10.1%)	35 (14.6%)	0.007*
	No	61 (76.3%)	143 (89.9%)	204 (85.4%)	
There were long waiting times	Yes	16 (20%)	17 (10.7%)	33 (13.8%)	0.072*
	No	64 (80%)	142 (89.3%)	206 (86.2%)	
The MOH-PHCC was far away	Yes	17 (21.3%)	9 (5.7%)	26 (10.9%)	0.000*
	No	63 (78.8%)	150 (94.3%)	213 (89.1%)	
They did not like the attitude of the staff	Yes	13 (16.3%)	8 (5%)	21 (8.8%)	0.007*
	No	67 (83.8%)	151 (95%)	218 (91.2%)	
They could not get an appointment	Yes	11 (13.8%)	9 (5.7%)	20 (8.4%)	0.046*
	No	69 (86.3%)	150 (94.3%)	219 (91.6%)	
Presence of any structural barrier	Yes	45 (56.3%)	41 (25.8%)	86 (36%)	0.000*
	No	35 (43.8%)	118 (74.2%)	153 (64%)	

*Chi-squared test; ANC: Antenatal Care; MOH: Ministry of Health; PHCC: Primary Health Care Center

We found that women with inadequate ANC visits experienced more personal barriers than did those with adequate visits-the total scores for personal barriers were (75% versus 35.8%; p<0.001). The most prevalent personal barriers were fear of examination and medical tests (26.3% versus 14.5%; p=0.034) and transportation problems (33.8% versus 7.5%; p<0.001). On the other hand, the least prevalent personal barrier was family problems (5.4% in both groups). The analysis of the differences in proportions of personal barriers between groups with inadequate and adequate ANC visits revealed statistically significant differences for "did not know about existing services" (p<0.001), "transportation problems" (p<0.001), "fear of examination and medical tests" (p=0.034), "family problems" (p=0.036), "under stress" (p=0.009), and "childcare problems" (p=0.027), as illustrated in Table 3.

Table 3 Possible personal barriers to use of antenatal care services in primary health care centers of the Ministry of Health

Barriers		Inadequate ANC visits	Adequate ANC visits	Total	p-value
		n=80 (33.5%)	n=159 (66.5%)	n=239 (100%)	
Fear of examination and medical tests	Yes	21 (26.3%)**	23 (14.5%)	44 (18.4%)	0.034*
	No	59 (73.8%)	136 (85.5%)	195 (81.6%)	
Transportation problems	Yes	27 (33.8%)**	12 (7.5%)	39 (16.3%)	0.000*
	No	53 (66.3%)	147 (92.5%)	200 (83.7%)**	
They had been under stress	Yes	20 (25%)	18 (11.3%)	38 (15.9%)	0.009*
	No	60 (75%)	141 (88.7%)	201 (84.1%)	
They forgot the appointment	Yes	14 (17.5%)	22 (13.8%)	36 (15.1%)	0.566*
	No	66 (82.5%)	137 (86.2%)	203 (84.9%)	
They had childcare problems	Yes	14 (17.5%)	12 (7.5%)	26 (10.9%)	0.027*
	No	66 (82.5%)	147 (92.5%)	213 (89.1%)	

They did not know about existing services	Yes	18 (22.5%)	0 (0%)	18 (7.5%)	0.000*
	No	62 (77.5%)	159 (100%)	221 (92.5%)	
They had personal problems	Yes	9 (11.3%)	9 (5.7%)	18 (7.5%)	0.192*
	No	71 (88.8%)	150 (94.3%)	221 (92.5%)	
They had family problems	Yes	8 (10%)	5 (3.1%)	13 (5.4%)	0.036*
	No	72 (90%)	154 (96.9%)	226 (94.6%)	
Presence of any personal barrier	Yes	60 (75%)	57 (35.8%)	117 (49%)	0.000*
	No	20 (25%)	102 (64.2%)	122 (51%)	

*Chi-squared test; **Percentages might not correspond to 100% because of rounding; ANC: Antenatal Care

The strongest facilitator in ANC service use was that the women "understood the staff's communication," that is, that the staff communicated effectively; this was reported by more than 80% of participants. The weakest facilitator was "being given gifts or money by family or spouse," reported by around 50% participants, as shown in Table 4.

Table 4 Possible facilitators to use of antenatal care services in in primary health care centers of the Ministry of Health

Facilitators		**Inadequate ANC visits**	**Adequate ANC visits**	**Total**
		n=79 (33.3%)*	**n=158 (66.7%)***	**n=237 (100%)***
Effective staff communication	Yes	62 (78.5%)	128 (81%)	190 (80.2%)
	No	17 (21.5%)	30 (19%)	47 (19.8%)
Convenient hours	Yes	60 (75.9%)	118 (74.7%)	178 (75.1%)
	No	19 (24.1%)	40 (25.3%)	59 (24.9%)
Emotional support	Yes	58 (73.4%)	119 (75.3%)	177 (74.7%)
	No	21 (26.6%)	39 (24.7%)	60 (25.3%)
Follow-up calls	Yes	59 (74.7%)	109 (69%)	168 (70.9%)
	No	20 (25.3%)	49 (31%)	69 (29.1%)
Childcare assistance	Yes	55 (69.6%)	105 (66.5%)	160 (67.5%)
	No	24 (30.4%)	53 (33.5%)	77 (32.5%)
Home visits	Yes	57 (72.2%)	108 (68.4%)	165 (69.6%)
	No	22 (27.8%)	50 (31.6%)	72 (30.4%)
Being provided rides to reach the PHCC	Yes	53 (67.1%)	101 (63.9%)	154 (65%)
	No	26 (32.9%)	57 (36.1%)	83 (35%)
Financial support	Yes	50 (63.3%)	104 (65.8%)	154 (65%)
	No	29 (36.7%)	54 (34.2%)	83 (35%)
Being given gifts or money	Yes	40 (50.6%)	84 (53.2%)	124 (52.3%)
	No	39 (49.4%)	74 (46.8%)	113 (47.7%)

*Two women were excluded because they did not respond; ANC: Antenatal Care; PHCC: Primary Health Care Center

DISCUSSION

In this study, structural and personal barriers affected the use of health services. We investigated several structural barriers, such as inconvenient clinic hours, dissatisfaction with provided care, long waiting time, distance to PHCCs, attitude of the staff from the perception of the participants, and appointment issues. Across all these barriers, women with inadequate ANC visits experienced greater issues compared to women with adequate visits. Significant differences

between the two groups were observed for their total structural barrier scores, ability to get an appointment, MOH-PHCC being located far away, dissatisfaction with previous care, and disliking the attitude of the staff.

The importance of the following structural barriers found in our study confirmed the findings of other studies: inconvenience of clinic hours [12-14], dissatisfaction with provided care [12,15], long waiting time [12-16], distance to PHCCs [12-14], attitude of the staff from the perception of the participants [12], and appointment issues [12,15]. More specifically, findings from a similar study reported that attitudes of clinic staff and long clinic waiting times were barriers to attending a health facility for ANC [15]. Another study conducted in the KSA identified unavailable transport and long travel distances as frequent reasons associated with fewer visits to PHCCs [16]. Regarding satisfaction from provided ANC services, our results were in line with the findings of previous studies conducted in the KSA that showed a relatively moderate level of patient satisfaction across all MOH facilities, hospitals, and PHCCs [17-19]. On the other hand, some studies conducted outside the KSA showed higher levels of satisfaction [20,21].

Personal barriers were also more prevalent among women with inadequate ANC visits. We examined several personal barriers, such as knowledge about existing services provided to pregnant women, transportation problems, being afraid of examination and medical tests, personal and family problems, stress, forgetting the appointment, and childcare problems. The most prominent barriers were fear of examination and medical tests and transportation problems. Significant differences between the two groups were observed in the total scores of the structural barriers, knowledge about existing services, transportation problems, fear of examination and medical tests, family problems, stress, and childcare problems. Our findings agreed with previous studies carried out on personal barriers, such as fear of examination and medical tests, stress, personal and family problems [12], forgetting the appointment, childcare problems [12,14], and transportation problems [12,13,15]. Moreover, we found that knowledge of existing services provided to pregnant women can affect their use-a similar finding was observed in a previous study in which the overall knowledge about ANC was better among women who had used antenatal care than in women who did not receive ANC [22].

The participants reported that certain facilitators may be effective in helping them use ANC services in MOH-PHCCs. These facilitators extended from gifts or money, rides to reach the PHCC, childcare assistance, home visits, convenient hours, follow-up calls, understanding the staff's communication, and financial and emotional support. The most prominent facilitator was understanding the staff's communication. Notably, forgetting appointments was also a barrier to use-accordingly, follow-up calls and appointment confirmations may benefit patients (this has already been suggested by a similar study conducted in the KSA [14]).

Ultimately, this study indicates that, although ANC services are free in the KSA, several factors still affect the use of ANC services. The clinical implications of the underuse of ANC services are no doubt associated with adverse pregnancy outcomes [23,24]. To resolve this underuse, we need holistic interventions involving health promotion, restructuring clinic hours, and providing appropriate support for pregnant women. Further studies are also needed to explore the knowledge levels of women regarding the availability of ANC services along with the possibilities of introducing evening hours in clinics and helping staff communicate better with patients.

Limitations

One of the limitations of this study was that we interviewed women at hospitals after their deliveries regarding issues and events that had occurred during the previous nine months; accordingly, they may not have remembered all relevant issues-recall bias may have been present. Another limitation is that we used probability proportional to size sampling, which may have led to different portions of the population being over-or-under represented due to chance variation in selections.

CONCLUSION

This study identified several barriers to the use of ANC services at MOH-PHCCs. In order to increase the use of the ANC services, several efforts are needed to make ANC services accessible and convenient, such as arranging more convenient clinics hours, reducing waiting time and easily secure appointments, and providing transportation facilities. Furthermore, decreasing patient fear of examinations and medical tests and patient stress, along with increasing patient knowledge about existing services, are also required to overcome these barriers. Other supportive

efforts that may help women in availing ANC services include financial and emotional support, childcare assistance, provision of home visits, and follow-up calls.

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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