Original Research Article

Impact of Coronavirus Disease Pandemic on Antenatal Care Utilization Among Primigravida Women in Asir region, Saudi Arabia

Abstract

Background: By the end of 2019, a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was diagnosed in Wuhan, Hubei province, China. In Saudi Arabia, the government applied prompt preventive measures against coronavirus disease 19 (COVID-19). COVID-19 associated restrictions have been affected the antenatal care (ANC) services that made careful surveillance of the pregnant women health requirement to protect them from COVID-19 infection. The current study was conducted to assess the COVID-19 pandemic effect on ante-natal care utilization among primigravida women in Asir region, Saudi Arabia.

Methods: A descriptive cross-sectional study was conducted targeting all females with their 1st pregnancy during COVID-19 pandemic. The questionnaire covered pregnant females' demographic data, medical history, covid-19 infection history, ante-natal care visits. Final questionnaire was distributed among woman attending antenatal care clinics at primary health care centres (PHCCs) and Abha Maternity and Children Hospital clinics in Asir region during the period from December 2020 to December 2021

Results: A total of 555 women attend to antenatal care clinics participated in the study. Primigravida women, who got pregnant during the COVID-19 pandemic were included. Exact of 114 primigravida women meet the inclusion criteria. Participants' ages ranged from 21 to more than 40 years with mean age of 24.6 ± 9.4 years old. Ante-natal care visits of 1st pregnancy women during a period of quarantine in Asir regions. Exact of 90 (78.9%) pregnant females were compliant to ANC visits during Covid-19 pandemic. A total of 63 (70%) of these visits were in the private sector while 21 (23.3%) were at the governmental hospitals and 18 (6.7%) at the PHCCs.

Conclusion: The current study revealed that pregnant primigravida females were adequately adherent for the ANC visits during covid-19 pandemic especially those with multiple pregnancies. The most settings provided ANC visits were the private sector with reported good pregnancy outcome.

Key words

Ante-natal care, COVID-19, primigravida, adherence, barriers, Saudi Arabia

Introduction

By the end of 2019, a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 was diagnosed in Wuhan, Hubei province, China [1,2]. The novel virus has spread all over the world with millions of infected cases and deaths [3]. The World Health Organization (WHO) classified the disease as a Public Health Emergency of International Concern on 30 January 2020 and recognized it as a pandemic on 11 March 2020 [4,5].

In Saudi Arabia, the government applied prompt preventive measures against coronavirus disease 19 (COVID-19). Saudi Arabia implemented policies of availability of personal protective equipment, stay-at-home, social distancing, and quality hospital care to the people [6,7].

Covid-19 associated restrictions have been affected the antenatal care (ANC) services that made careful surveillance of the pregnant women health requirement to protect them from COVID-19 infection and vertical transmission which concern as major issues and the government restriction [8]. Regulating the ANC to this pregnant woman regrade to Royal College of Obstetricians and Gynaecologists the antenatal visit greater than the risk of being exposed to COVID-19 additional challenge the face-to-face consultation during social distancing, so women to get optimum antenatal care are challenge, if they have medical intervention only should be come to the hospital [9,10]. During COVID-19 pandemic the ANC visits switched to telephone, virtual consultation and reduce antenatal visits [11]. The evidence indicates that five or fewer visits are increased risk of perinatal mortality especially among primigravida females with less experience [12]. The current study was conducted to

assess the COVID-19 effect in ante-natal care monitoring in a 1st pregnancy woman during a period of quarantine in Asir region.

Methodology

A descriptive cross-sectional study was conducted targeting all females with their 1st pregnancy during COVID-19 pandemic in Asir region, Saudi Arabia. The study was approved by The Research Ethics Committee at King Khalid University with approval number of (ECM#2020-3217). The authors began the study tool with the help of a comprehensive review of related articles and consulting specialized expert, including Obstetrician and Arabic translator to ensure the accuracy of the questionnaire translation process.. The questionnaire covered pregnant females' demographic data, medical history, COVID-19 infection history, ante-natal care visits and delivery nature and complications. Three experts at King Khalid University reviewed the study questionnaire for validity and relevance. Final questionnaire was distributed among woman attending antenatal care clinics at primary health care centres (PHCCs) and Abha Maternity and Children Hospital clinics in Asir region during the period from December 2020 to December 2021.

Data analysis

After data were extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed tests. P value less than 0.05 was statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including pregnant females' demographic data, employment, history of covid infection and related complications, ante-natal care visits, frequency of visits, and supplements intake. Also, delivery related data and birth outcome

were displayed. Crosstabulation was used to show the Relationship between females' bio-demographic data and ante-natal care visits adherence. Significance of relation was assessed using Pearson chi-square test and exact probability test for small frequency distributions.

Results

A total of 555 women attend to antenatal care clinics participated in the study. Primigravida women, who got pregnant during the COVID-19 pandemic were included. Exact of 114 primigravida females meet the inclusion criteria. Participants' ages ranged from 21 to more than 40 years with mean age of 24.6 ± 9.4 years old. Exact of 81 (71.1%) females had university level of education or above. A total of 90 (78.9%) females were not employed. Considering monthly income, 60 (51.6%) had monthly income up to 5000 SR while 24 (21.1%) had monthly income exceeding 10000 SR. As for BMI, 63 (55.3%) of the females had normal weights, 33 (28.9%) had overweight, and 18 (15.8%) were obese. Exact of 54 (47.4%) of the females had multiple pregnancies (Table 1).

Exact of 18 (15.8%) females got COVID-19 infection during pregnancy. Infection was mainly in the first trimester (50%), 33.3% at their 4th month and 1 case at the 5th month. Only 6 cases (33.3%) had complications after the infection (Table 2).

Exact of 90 (78.9%) pregnant females were compliant to ANC visits during COVID-19 pandemic. A total of 63 (70%) of these visits were in the private sector while 21 (23.3%) were at the governmental hospitals and 6 (6.7%) at the PHCCs. The first visit was during the 1st month among 42 (46.7%) females, while 10 (33.3%) of the females undergone the first visits during their 2nd month of pregnancy. As for the second visit, it was at the 3rd month

among 33 (40.7%) females and during 2nd month among 24 (29.6%) females. Third visits were during 3rd month among 8 (33.3%) females and during 4th month among 18 (25%) females. Totally, 39 (43.3%) females did 9-10 ANC visits, 36 (40%) undergone 5-8 visits while only 15 (16.7%) undergone 1-3 visits. As for nutritional supplements intake, 99 (86.8%) had folic acid, 87 (76.3%) had iron supplements, 36 (31.6%) had vitamin D, 36 (31.6%0 received zinc while 12 (10.5%) had no supplements (Table 3).

A total of 84 (73.7%) of the study female get birth during COVID-19 pandemic. NVD was reported among 60 (71.4%) females while 21 (25%) got birth by C.S. Exact of 6 deliveries (7.2%) occurred at the 7th month, 6 deliveries (7.1%) occurred at the 8th month and 66 (78.6%) deliveries at the 9th month. Post-delivery complications were reported among 12 females; 9 (10.7%) had post-partum bleeding, 3 cases needed surgical intervention while 72 (85.7%) had no complications. Exact of 78 (92.9%) had normal child while 3 females had low birth weight baby while 3 had stillbirth (Table 4).

Exact of 87.5% of females who aged 31-40 years attended ANC visits during quarantine period versus 66.7% of those who aged more than 40 years with no statistical significance (P=.724). ANC visits were reported among 85.2% of university educated females compared to 63.6% of those who had secondary level of education or below (P=.139). Regarding employment status, 87.5% of employed females attended ANC visits in comparison to 76.7% of non-employed group (P=.504). Also, 83.3% of female with multiple pregnancies attended ANC visits compared to 75% of others with single pregnancy (P=.529). All females who had COVID-19 infection during pregnancy attended ANC visits versus 75% of others (P=.168) (Table 5).

Discussion

Major concerns have been raised about the impact of COVID-19 on pregnancy, as well as the risk of vertical transmission. Recent evidence suggests that COVID-19 pregnant women with severe disease have a high risk of maternal mortality [13]. Early studies from China found that some newborns born to COVID-19 positive mothers were preterm and had low birth weight, but the evidence linking these outcomes to the COVID-19 is still unclear [14]. The pandemic response to COVID-19 has taken a significant portion of health care resources that would have otherwise gone to routine care. Other vital health care services may be harmed as a result of this resource reallocation [15]. This, of course, may affect negatively the routine antenatal care provided to pregnant women. If essential maternal health services are not maintained, the progress made thus far may be reversed, and we may see an increase in morbidity and mortality in the months and years ahead. In this study, we assessed the behaviour of 1st primigravida women regarding ANC utilizations in Asser region, southwest of Saudi Arabia. Our concern was the compliance of these women with regular ANC visits. We surprisingly found that 1st pregnant women were adherent to ANC visits which reflects their awareness of the importance of such visits for their health and their babies' health. These results are concordant with WHO data regarding ANC coverage in Saudi Arabia which is generally high [22]. A recent World Health survey for Saudi Arabia found that 80% of surveyed women reported that they had at least four ANC visits during their last pregnancy and 99% of deliveries occurred at hospitals in 2019 [16]. In another study in Saudi Arabia that conducted by Alanazy et al. in a rural area before the pandemic, over half of the women surveyed had missed at least one appointment [17]. This percentage is significantly higher than the percentage reported in our study (21.1%). Our unique finding can be explained in light of the tremendous efforts of the Saudi Arabia- Ministry of health (MOH) and PHCCs in educating women and counselling them regarding the relevance of ANC visits. Moreover, this finding may also be, in part, due to COVID-19 regression in the period when this study

has been conducted. Besides, the increase in receiving the COVID-19 vaccine by citizens, and encouraged them, including pregnant women, to visit health centres without fear for their health or transmission of infection to their children. However, another study conducted during the pandemic in Saudi Arabia has contradictory findings as the adherence of pregnant women to ANC visits during the pandemic was much lower than that of general data before the pandemic. Specifically, this study has found that 30.0% of mothers involved missed or delayed their ANC appointment during the COVID-19 pandemic period [18]. This finding can be attributed to that this study has been performed relatively early in the time (end of 2020) of the pandemic era. At that time pregnancy was thought to be an important risk factor for severe disease. This impression had resulted in over-cautious recommendations for ANC. Saudi MOH Clinical Guidelines for Nursing & Midwifery Practice during the COVID-19 pandemic issued early in the pandemic directed midwives to "advise women to minimize the in-person antenatal visits to decrease the exposure" [19]. Furthermore, pregnant women diagnosed with COVID-19 were requested to defer ANC visits until they are cured [19]. A recent review had documented negative outcomes due to COVID-19 response tough policies on fetal health [20]. Moreover, other tough policies have been implemented at the beginning of disease spread. For instance, a total of four major PHCCs in Buraidah city have been dedicated solely to the COVID-19 screening process, with two more PHCCs being added later for vaccine distribution. As a result, fragmentation of continuity of care and overburdening of hosting PHCCs resulted from redirecting clients to the nearest PHCCs. To avoid negative consequences, epidemic response directives should be reviewed frequently. Similarly, public education should immediately correct any poor evidence advice. It's difficult to change public attitudes quickly, so weak-evidence advice may lead to serious consequences rather than improving practice.

Tele-consultation and electronic appointment reminders are two examples of the Kingdom's progress in the use of information technology. The participants' high educational levels made it easier to make good use of these advancements. To what extent did these measures reduce the negative impact of COVID-19 on the ANC, that's quite unclear to us.

In our study, adherence to ANC visits was not significantly affected by various examined participant factors; age, educational level, employment status, number of pregnancies, and being previously infected with COVID-19. According to a recent Saudi study, missed ANC appointments were significantly inversely associated with perceived ANC benefits, staff information, and staff care [21]. Unfortunately, these factors were not addressed in the current study. Another limitation of our study is the small, yet representative, sample size. This was due to the low response rate among pregnant women which may be attributed to social issues.

Besides the issue of concern, we assessed other factors which revealed to be concordant with general Saudi data and with WHO data and guidelines.

Public response to the epidemic is expected to evolve as new information and a clearer picture of the epidemic emerge. The results of follow-up surveys may differ from the results of the first survey.

Conclusion

The current study revealed that pregnant primigravida females were adequately adherent for the ANC visits during COVID-19 pandemic especially those with multiple pregnancies. The most settings provided ANC visits were the private sector with reported good pregnancy outcome.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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Table 1. Bio-demographic data of 1st pregnancy women during a period of quarantine in Asser regions

Bio-demographic data	No	%
Age in years		
21-30	81	71.1%
31-40	24	21.1%
> 40	9	7.9%
Educational level		
Secondary / below	33	28.9%
University / above	81	71.1%
Employment		
Not employed	90	78.9%
Employed	24	21.1%
Family income		
< 3000 SR	30	26.3%
3000-5000 SR	30	26.3%

5000-7000 SR	21	18.4%
7000-10000 SR	9	7.9%
> 10000 SR	24	21.1%
Body mass index		
Normal weight	63	55.3%
Overweight	33	28.9%
Obese	18	15.8%
Number of pregnancies		
Single pregnancy	60	52.6%
Multiple pregnancy	54	47.4%

Table 2. Covid-19 infection history among 1st pregnancy women during a period of quarantine in Asser regions

Covid-19 infection	**No**	**%**
Did you get covid-19 infection during pregnancy?		
Yes	18	15.8%
No	96	84.2%
If yes, at which month		
2nd month	9	50.0%
4th month	6	33.3%
5th month	3	16.7%
Did you have complications after the infection		
Yes	6	33.3%

No		12	66.7%

Table 3. Ante-natal care visits of 1st pregnancy women during a period of quarantine in Asser regions

ANC visits during covid-19		**No**	**%**
Was there a follow-up with ANC clinics?	Yes	90	78.9%
	No	24	21.1%
Where was the follow up?	PHCCs	6	6.7%
	Governmental hospital	21	23.3%
	Private sector	63	70.0%
When was the first visit?	1st month	42	46.7%
	2nd month	30	33.3%
	3rd month	15	16.7%
	6th month	3	3.3%
When was the second visit?	1st month	6	7.4%
	2nd month	24	29.6%
	3rd month	33	40.7%
	4th month	3	3.7%
	5th month	6	7.4%
	6th month	3	3.7%
	7th month	3	3.7%
	9th month	3	3.7%
When was the third visit?	2nd month	6	8.3%

	3rd month	24	33.3%
	4th month	18	25.0%
	5th month	9	12.5%
	7th month	6	8.3%
	8th month	9	12.5%
Total number of ANC visits	1-3	15	16.7%
	5-8	36	40.0%
	9-10	39	43.3%
Did you take any nutritional supplements during pregnancy	None	12	10.5%
	Iron supplements	87	76.3%
	Folic acid	99	86.8%
	Vitamin D	36	31.6%
	Zinc	36	31.6%
	Other vitamins	39	34.2%

Table 4. Delivery data of 1st pregnancy women during a period of quarantine in Asser regions

Delivery data	**No**	**%**
Did you have birth during covid-19 pandemic?		
Yes	84	73.7%
No	30	26.3%
Mode of delivery		
NVD	60	71.4%
C.S	21	25.0%
Forceps delivery	3	3.6%
Gestational age at delivery		
7th month	6	7.2%
8th month	6	7.2%

9th month	66	78.6%
10th month	6	7.1%
Post-delivery complications		
No complications	72	85.7%
Post-partum bleeding	9	10.7%
Surgical intervention	3	3.6%
Birth outcome		
Normal baby	78	92.9%
Low birth weight baby	3	3.6%
Stillbirth	3	3.6%

Table 5. Distribution of 1st pregnancy women ANC during a period of quarantine in Asser regions by their bio-demographic data

Bio-demographic data	**Was there a follow-up with ANC clinics?**				**p-value**
	Yes		**No**		
	N	**%**	**No**	**%**	
Age in years					
21-30	63	77.8%	18	22.2%	.724$
31-40	21	87.5%	3	12.5%	
> 40	6	66.7%	3	33.3%	
Educational level					
Secondary / below	21	63.6%	12	36.4%	.139$

University / above	69	85.2%	12	14.8%	
Employment					
Not employed	69	76.7%	21	23.3%	.504[$]
Employed	21	87.5%	3	12.5%	
Number of pregnancies					
Single pregnancy	45	75.0%	15	25.0%	.529
Multiple pregnancy	45	83.3%	9	16.7%	
Did you infect with covid-19 during pregnancy?					
Yes	18	100.0%	0	0.0%	.168
No	72	75.0%	24	25.0%	
Did you have complications after the infection					
Yes	6	100.0%	0	0.0%	-
No	12	100.0%	0	0.0%	

P: Pearson X^2 test *$: Exact probability test*

** P < 0.05 (significant)*