

COVID-19 Vaccine Acceptability Among Pregnant Women at a Primary Health Care Facility in Iraq, Baghdad

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Abstract—The novel coronavirus COVID-19 is one of the most infectious diseases, and this research elucidates its characteristics. No research has looked at how pregnant women in Baghdad, Iraq, feel about getting the COVID-19 vaccine. Finding out how pregnant women in Baghdad's trendy areas feel about getting the COVID-19 vaccine was the main goal of this research. At one of Baghdad's health centers, the researchers used a descriptive analysis strategy. Pregnant women from all walks of life and all levels of education and culture were the subjects of the study. When the COVID-19 vaccine became available in Baghdad, 63.3% of pregnant women expressed their willingness to receive it. In comparison to those aged 39, those aged 22 were 72% more likely to consent to receiving the vaccine (OR-0.28, CI: 0.13 -0.62). Compared to women with four or more pregnancies, those with 0-1 previous births were 4.3 times more likely to receive the vaccine (OR-4.3, CI: 1.98-9.48). Since they were no longer bound by their ex-husband's views, pregnant women who had recently gone through a divorce were more inclined to receive the vaccine (OR-0.23, CI: 0.10-0.51). Pregnant women who had jobs were four times more likely to consent to the immunization than those who did not (OR-4.2, CI: 2.28-7.75). The odds of accepting the vaccine were four times higher in those with a good attitude toward immunization (OR-4.05, CI: 1.89-8.69). While 63.3% of participants agreed that COVID-19 was an emergency, there were substantial variations in the consent of pregnant women according to demographics, cognition, and practice. People's health and business leaders in Baghdad, particularly in impoverished neighborhoods, need to educate the people and adopt COVID-19-friendly messages before the virus can be introduced to the city.

Keywords— COVID-19, pregnancy, Acceptability.

I. INTRODUCTION

A worldwide pandemic threatening human life across the globe, the coronavirus disease that ravaged humanity in 2019, hence the name COVID-19, is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The risks of complications during pregnancy, including preterm delivery, infant pneumonia, COVID-19 virus transfer to the developing baby, and maternal infection after giving birth, have recently come to light (1). Considering the rapid spread of the COVID-19 pandemic, the development of an effective vaccine is of critical relevance. Primarily preventing the spread of the disease through vaccination is possible. Current non-specific measures, like personal hygiene, social distance, and quarantine, have the potential to decrease the virus's transmission and level the epidemic curve. Unless the population develops herd immunity, the COVID-19 pandemic might continue unabated. It is common for such a condition to be contracted through immunization or illness in the community. Thus, to halt the spread of the COVID-19 pandemic, it is necessary to achieve herd immunity through a high vaccine coverage (2). Consequently, creating and distributing the vaccine is a commendable step in alleviating this public health emergency.

The methods taken to contain the Corona pandemic, such as imposing a lockdown on the population and implementing social distancing, did not have a tangible role, as the number

of infections increased in Iraq and in densely populated areas, and the emphasis on the use of disinfectants, not mixing, and imposing community restrictions negatively affected the mental health of pregnant women.

As soon as the SARS-CoV-2 virus was identified as the causal agent and the initial genome sequence was published, several research centers and pharmaceutical companies from various nations began developing the vaccine. At the time, everyone thought that immunizations that really worked would be accessible everywhere. Nevertheless, not all regions with high infection rates were vaccinated only because the vaccine was available. Vaccination rates were lower than anticipated; for instance, in 2009, population coverage varied from 0.49 to 59% in 22 nations that had a vaccine against influenza A H1N1. This vaccine was launched either before or at the start of the second wave of epidemics. Health officials have characterized vaccine reluctance as "the reluctance or refusal to be vaccinated despite the availability of vaccines," and they have referred to it as a "public health pandemic paradox." (3). Emotional, cultural, social, and political factors can be just as influential as cognitive ones when it comes to vaccine hesitancy and acceptance reasons; these factors can differ by nation, city, or community, but they can also influence accessibility, the quality of healthcare system, and the availability of vaccines.

Compared to countries with high yearly incomes, vaccine uptake is obviously lower in low- and middle-income countries (4). Some low- and middle-income nations may have

a harder time funding vaccine research and development, and they may also have to cope with populations that see vaccination as inherently dangerous, fearing they would be used as guinea pigs. Research has shown that novel vaccines against infectious diseases in Southeast Asia, including dengue, Zika, and Ebola, are not being widely used. In an Indonesian study on the adoption of COVID-19 vaccines, 93.3% of participants said they would take the shot if it were 95% effective, but that number plummeted to 67.0% when the efficacy was 50% (5). A recent online study in Saudi Arabia indicated that 64.7% of the population would be open to receiving a COVID-19 vaccination whenever it became accessible, suggesting that ambiguity regarding the vaccine's efficacy is a factor influencing its uptake (6). Nevertheless, vaccination acceptance varies among age groups, educational attainment, occupational specialty, and socioeconomic status. Vaccination was especially important for priority risk groups including pregnant women, the elderly, and people with chronic health issues because of their increased susceptibility to infection. Over the course of four years, researchers in a primary health care (PHC) setting found a comparable pattern: population vaccination rates averaged 4.5% per year (7). Despite pregnant women being a known at-risk demographic, there has been no reported study on COVID-19 vaccination uptake in Iraq. Hence, this study set out to investigate how many pregnant women in Baghdad had received the COVID-19 vaccine and what variables contributed to their acceptance of the vaccine.

II. MATERIALS AND METHOD

A. Research plan: The dates of September 4–October 3, 2020, were used for this descriptive study, which took place at the Community Health Center in the Al-Shaab district of Baghdad, Iraq. This research was a component of a bigger study that looked at how COVID-19 affected pregnant women mentally as well as their knowledge, attitudes, and behaviors.

B. Environment and Participants: In the Al-Shaab neighborhood of Baghdad, Iraq, you may find the Community Health Center. There are two basic types of housing that most people inhabit: formal and informal. A large portion of these housing complexes rely on public healthcare systems for Free services are offered by them. In accordance with the directives of the Iraqi Ministry of Health, the Community Health Center offers a bundle of comprehensive primary health care services, including antenatal care, to over 20,000 patients each month. This includes over 400 pregnant women who visit the center for prenatal care.

C. Number of samples. Epi Info 7 was used to establish the sample size. Due to a lack of data on the safety of the COVID-19 vaccine during pregnancy, this study made the following assumptions: a vaccination acceptance rate of 50.0%, a 95% confidence interval, a 5% precision limit, and a 1.0 design effect.

D. Acquiring data and choosing participants. Patients who visited the clinic both before and during their pregnancies made up the bulk of the sample of pregnant women. At the primary health care center in Al-Shaab City, all patients, including pregnant women, are screened for symptoms of

COVID-19. If any of the pregnant women are discovered to be infected, they are isolated for further treatment. The study did not include pregnant women who had signs of COVID-19. Women who were pregnant were reassured that their refusal to participate in this study would not be met with any kind of discrimination in relation to antenatal appointments. Two social workers with backgrounds in social science data collected the information using a standardized questionnaire. While gathering data, extensive precautions were used. The demographics, knowledge, attitudes, and habits of women regarding COVID-19 infection were used to design a two-page questionnaire. They were also asked to fill out a questionnaire regarding their acceptance of the COVID-19 vaccine.

E: Survey: A total of six COVID-19 symptoms—cough, sore throat, body aches, fever, difficulty breathing, and fatigue—were queried of pregnant women using a yes/no format. Additionally, pregnant women were asked to confirm or deny the following seven statements: Is it true that the virus may live outside of a host for days? Is it true that the virus may live on plastic for days outside of the body? Who becomes very sick of contracting COVID-19? Are non-smokers less prone to becoming ill with COVID-19 than smokers? Does the infection always manifest itself in some way? Only elderly individuals contract COVID-19 and get sick; the virus has a lower impact on children. Five yes/no questions were used to gauge the sentiments of the respondents: A dangerous virus known as COVID-19 could infect you or someone in your family.

There was a total of six training questions:

1. While you're in public, do you keep at least a one- to two-meter distance?
2. Are you someone who goes out in public while wearing a face mask?
3. Are you planning to see loved ones amid the COVID-19 pandemic?
4. Right after you step foot into your house, will you wash or use hand sanitizer?
5. Would you consider seeing an individual who has been quarantined because of a COVID-19 infection?
6. Are you planning to cover your mouth whenever you cough or sneeze?

F. Quantitative Data: On a scale from one (1) for right responses to zero (0) for wrong ones, or from positive (1) to negative (0) comments, the gathered data and COVID-19 infection practices score were evaluated. The sum of the scores on the right answers and positive statements was used to measure the total score on the knowledge, attitude, and practice section.

G. Analysis of data: Microsoft Excel was used for data collecting and coding, followed by transportation and analysis using SPSS version 22. Mean with standard deviation (SD) and frequency distribution were used for continuous variables and categorical variables, respectively, in descriptive statistics. In order to determine what factors, contribute to the acceptability of the COVID-19 vaccination, a chi-square test and binary logistic regression were employed. Statistics were deemed significant when the p-values were less than 0.05.

H. Considering ethical factors. Everyone who took part in the study did so voluntarily. No damage would come to participants if they decided at any point to stop taking part in the study. A section detailing the study's goals, nature, and

purpose as well as a promise of anonymity and secrecy was included in the permission questionnaire. Participating in this study were 346 pregnant women. Approximately 63.3% of pregnant women said they would get the COVID-19 vaccine the moment it was available. Respondents' average age was 26.71 (SD=6.81), and most pregnant women (81.2%) were young adults (aged 20–29). The percentage of pregnant women who were of workers (71.4%), while 52.0% are out of work. There was an average of one parity and a mean of 23.77 weeks of gestational age (SD= 6.83). Although 56.7% had completed high school or its equivalent, over half (52%) were listed as unemployed. With an average knowledge score of 3.48 (SD=1.36) out of a possible 13, 43% of pregnant women achieved a 50% or higher on the knowledge-related questions. A small percentage of people (6.6% and 8.7%, respectively) were aware that viruses may survive on plastic and outside of the body. Having said that, 99% of participants were aware of the signs of a COVID-19 infection (at least one symptom) and 77% were aware that the virus does not just kill the elderly (Table 1) Respondents' attitude was lacking; out of a possible 5, the mean score was 1.77 (SD=1.12). Half of those who took the survey said they or a family member may contract the COVID-19 virus, and 63% said the epidemic is a severe health

concern. The results showed that pregnant women's preventative behaviors were favorable, with a mean practice score of 4.7 (SD=.97) out of a possible 6. The majority of participants (94%) said they wouldn't visit a COVID-19 positive patient, 92% said they wouldn't see other loved ones during the pandemic, and 93 percent said they would wash their hands when they came inside from the outside.

III. RESULTS

A total of 346 women expressed interest in taking part in this study. In the absence of a medical necessity and recommendation, 63.3% of pregnant women would be open to receiving COVID-19. Pregnant women tended to be young adults (aged 20–29) for the most part, with a mean age of 26.71 (elastic deviation= 6.81) years for those who consented to take the medication. Among the pregnant women, 51.2% were stay-at-home moms and 71.4% had experienced a divorce. There was a median gestational age of 1.01 weeks and a mean of 23.77 weeks (elastic deviation = 6.83) weeks. Only 7% of them made it through secondary school and beyond.

TABLE 1. Acceptance of Covid -19 Vaccine

		Will accepted vaccine n = 346		Chi-squared value	p- value
		No (%)	yes (%)		
Age	15 to 22 years	16.8	83.2	24.67	0.025
	23 to 30 years	47.1	52.9		
	31 to 38 years	42.5	57.5		
	Over 38 years	31.6	68.4		
Gestation age	Up to 13 weeks	26.2	73.8	3.92	0.141
	14 to 27 weeks	38.5	61.5		
	28 weeks and over	40.2	59.8		
Parity	0 and 1	40.1	59.9	6.89	0.032
	2 and 3	24.7	75.3		
	4 and more	50.0	50.0		
Standard of living	low	29.1	70.9	21.71	0.000
	Middle	58.3	41.7		
	high	51.3	48.7		
Highest education	No education	50.0	50.0	27.90	0.000
	Up to grade	48.8	51.2		
	matric	37.7	62.7		
	High education	13.0	87.0		
Employed Status	employed	53.7	46.3	38.95	0.000
	unemployed	21.3	78.7		

TABLE 2. Knowledge Attitude and Practice of 346 Pregnant

Knowledge	Frequency	Percent
symptoms Knowledge		
cough	156	45.1
Sore throat	175	50.6
Body pain	86	24.9
fever	84	24.6
Difficult breathing	238	68.8
tiredness	30	8.7
Knowledge of the viral	23	6.6
Outside the body		
The virus survives for days outside the body on a plastic surface ≥ 3 days	30	8.7
Most people who get COVID19 will get very ill	95	27.5
Smoker who gets COVID19 are more likely to get ill than non-smokers	145	41.9
You can have the virus without any symptoms	143	41.3
On average children get less ill from the virus than adults	186	53.8
Not only elderly people die from COVID19	265	76.6
Mean knowledge (SD)	1.36	43.5
Attitude of pregnant women		
I may get infected by COVID19	10	2.9
Any one in my family may get infected	173	50
COVID-19 epidemic is serious infection	218	63
The clinic will be able to handle COVID19 pandemic	12	3.5
The government has provided enough information regarding COVID19	154	44.5
Mean attitude (SD)	1.77	30
Practice		
I cover mouth when sneeze or cough (n=346)	168	48.6
I use a face mask in public places (n=346)	262	75.7
I maintain a social distance of 1-2 meters (n=346)	229	66.2
I wash or sanitize hands coming from outside (n=346)	322	93.1
I will not visit family or friends during lockdown (n=346)	318	91.9
I will not visit COVID-19 positive patients (n=346)	326	94.2
Mean practice score (SD)	4.7	78.3

With an average knowledge score of 3.48 (standard deviation=1.36) out of a possible thirteen, 43% of pregnant women achieved a 50% or higher on the knowledge questions. Only a small percentage of those who took the survey knew that the virus may live on inanimate objects and plastic (8.7% and 6.6%, respectively). Table 2 shows that 99% of participants were aware of the symptoms of COVID-19 and that 77% were aware that the virus does not cause death in the elderly (Table 2), however the respondents' attitude was poor, scoring 1.77 (standard deviation = 1.12) out of a possible 5. Approximately 63% of women think the COVID-19 pandemic is a fatal one, and 50% of those same women said that someone in their family could be infected. With an average practice score of 4.7 (SD =.97) out of a possible 6, preventive practices for pregnant women were determined to be favorable. Nearly all the healthcare providers surveyed (94%), when asked if they would see a patient who tested positive for COVID-19, said no.

TABLE 3. Association among practice with vaccine acceptance, knowledge, and attitude

	Will accept vaccine		Chi-squared value	p-value
	no	yes		
Good knowledge	yes	5.5%	6.65	0.010
	no	94.5%		
Good attitude	yes	10.2%	22.23	0.00
	no	89.8%		
Good practice	yes	100%	3.54	0.60
	no	2.7%		

The results of the bivariate analysis showed a significant association between vaccine acceptance ($p < 0.05$) and factors such as marital status, number of previous births, age of pregnant women, and education level. As an illustration, in comparison to other categories, respondents with 2-3 prior pregnancies had a significantly higher vaccine acceptance rate of 75.3% ($p < 0.05$). Older pregnant women had a lower vaccine acceptance rate ($p < 0.05$) compared to younger pregnant women (83%). In comparison to pregnant women who were married and lived together, those who were divorced had a substantially greater vaccine acceptance rate (70.9%) ($p < 0.05$). Among pregnant women without education, the vaccine acceptance rate was 87% ($p < 0.05$), however among those with a greater level of education it was much higher at 87%. Compared to working women, stay-at-home mothers were more likely to accept the vaccine (78.7% vs. 21.3%, $p < 0.05$). Table 3 shows that there was a significant correlation between vaccination acceptance and knowledge and attitudes concerning COVID-19 ($p < 0.05$) in the chi-square test for association, but no association between vaccine acceptance and study participation ($p > 0.05$).

We used a stepwise logistic regression analysis to find people who would accept the vaccine, and then we calculated their future odds ratio. At first, the study included all variables that were discovered to have a significant association with vaccine acceptability in the bivariate analysis. Female participants younger than 22 years old had a 72% lower likelihood of accepting the vaccine (OR=0.28, CI: 0.13-0.62)

than those older than 39 years old, according to the results. The vaccination acceptance rate was 4.3 times higher (OR=4.3, CI: 1.98-9.48) among women who had no children or were nulliparous than among those who had four or more births. Compared to pregnant women living with their partners, those who had recently gone through a divorce were less likely to receive the vaccine (OR=0.23, CI: 0.10-0.51). The vaccination uptake rate was four times higher among working pregnant women compared to those without jobs (OR=4.2, CI: 2.28-7.75). The odds of vaccination acceptance increasing by a factor of four were observed when individuals had a favorable view and were reassured about the COVID-19 vaccine (OR=4.05, CI: 1.89-8.69).

IV. DISCUSSION

One of the most important factors for the success of vaccination campaigns against communicable diseases is the population's acceptance of the vaccine and preventive instructions. To achieve this goal, it is necessary for the general population to understand the risks of Covid-19 disease, accept taking the vaccine, and trust the health system and media sources, especially those used to obtain information about the Covid-19 pandemic. This study provides an overview of demographic variables, the level of knowledge and attitudes towards preventive practices, and acceptance of the Covid-19 vaccine among a group of pregnant women. This study is unique in Iraq because it describes the acceptance of the Covid-19 vaccine by pregnant mothers, unlike other studies that dealt with the Corona pandemic and its impact on humanity in general without focusing on a specific group of the population as is the case in this study. Among the demographic indicators of pregnant women are the group of pregnant women separated from their husbands (71.4%), the low level of education (half of them have less than a high school education) and the high unemployment status (52%) with the pregnancy indicator indicating poor social and economic conditions. The percentage of 63.3% of pregnant women who agreed to take the COVID-19 vaccine can be considered good compared to other results from the general population in Baghdad (64.7%), however, a higher acceptance rate was observed among the general population (72.5%). This acceptance rate is much higher than the actual overall coverage of the Corona vaccine. The disparity in living standards (rural vs. urban, poor vs. rich, educated vs. uneducated) in health care is always associated with distrust in

the health care system among the population. Our study found that uneducated or low-educated pregnant women were less accepting of the potential

COVID-19 vaccine. What was observed in the current study was that the level of knowledge about the nature of COVID-19 among the participants was low even though health authorities have launched a media campaign to educate the population about preventive measures to reduce human-to-human transmission of the disease. This could be attributed to the socio-demographic characteristics, and similar findings can be found in neighboring countries where they live in rural dwellings, have low educational attainment and high unemployment.

The fact is COVID-19 represents an emerging infectious disease, the optimal treatment for infected individuals has not yet been determined. However, previous case reports from developed countries have reported that the outcome of COVID-19 during pregnancy is expressing approval (8).

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