

Covid Vaccination Status and Reasons for Non-Vaccination in Reproductive Age Women at Tertiary Care Centres

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ABSTRACT

Objective: To explore covid vaccination status of reproductive-age women and to determine reasons for non-vaccination among those who did not receive the vaccine.

Study Design: Prospective cross-sectional multi-centre study

Place and Duration of Study: This study was conducted at the department of Obstetrics & Gynaecology Dow University Hospital and Dr. Ruth K. Pfau Civil Hospital Karachi from March to May 2023.

Materials and Methods: 405 women were enrolled after informed consent. Interviews with women were taped on predesigned proforma. Demographics, pregnant status, vaccination status, reasons for non-vaccination, and knowledge of vaccine indications were recorded.

Results: Among 405 women, 180 (44.4%) were vaccinated, and 225 (55.55%) were non-vaccinated. The mean age of vaccinated women was 30.69 years \pm 7.33 (CI: 29.62-31.77) versus 28.63 \pm 6.5 years (CI: 27.78-29.5). In those vaccinated, nonpregnant women were in significantly higher proportion compared to pregnant; 46.66% versus 24.44% $p < 0.05$. The most frequent reasons for non-vaccination were a concern for active disease 19.11% and adverse effects on fertility 18.66%, followed by the influence of family 15.55%, concerns for transmission to fetus in Pregnancy (10.66%) and thinking the vaccine was unnecessary (9.77%)

Conclusion: Significant proportion of our reproductive-age women is non-vaccinated due to their concerns about getting diseases following vaccination, adverse effects on fertility, transmission to the fetus during Pregnancy and influence by family.

Key Words: Covid vaccination, Pregnancy, vaccinated, non-vaccinated, Vaccine hesitancy, Reproductive age

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INTRODUCTION

Women in reproductive age make up a significant segment of our population i.e. 49.5%, and have unique needs for Covid immunization.¹ Their health is impacted by the pandemic's physiological and psychological stress, quarantine, increased financial load, and pregnancy problems.^{2,3} Additionally, there is a higher risk of serious illness, premature delivery, small-for-gestational-age fetuses, and stillbirths among pregnant women who get Covid-19.⁴

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Vaccination is the mainstay to intercept pandemic. The World Health Organization (WHO) advised increasing vaccination coverage to 71% of the population by mid-2022 due to the quick development of many COVID-19 vaccines.⁵ Royal College of Obstetricians & Gynaecologists U.K and American College of Obstetricians & Gynecologists recommends covid vaccination for reproductive age women.^{4,6} Studies from United states and Saudi Arabia conducted in pregnant and postpartum women, reported 63 percent and 68.2% women respectively had received vaccine.^{7,8} Limited studies from Pakistan explored Covid vaccination. Telephonic survey by Aga Khan University reported 66% postpartum women were willing for vaccination.⁹

Because of extremely limited data on actual vaccination status in reproductive age women, it is crucial to investigate the immunization status for Covid among women of reproductive age and to ascertain the causes of non-vaccination.

MATERIALS AND METHODS

Study was conducted from March to May 2023 at obstetrics and gynaecology departments of Civil

Hospital & Dow University Hospital Karachi. Dow University of Health Sciences Karachi IRB approved research. All eligible prenatal and gynaecology outpatients and hospitalised women were offered participation. 405 women enrolled after informed consent. Women were interviewed and data was recorded on proforma. This proforma was created utilising clinical knowledge, experience and information from studies.⁸ Demographic variables like age, parity, pregnant or nonpregnant status, risk factors for covid infections like hypertension, diabetes, asthma, respiratory, cardiovascular, and renal disease, use of corticosteroids, immunosuppressive drugs, vaccination status, number of doses, reason for non-vaccination, whether her own or not, participant's awareness about covid vaccination, and Tetanus immunisation, a common pregnancy vaccination, was also assessed.

Inclusion Criteria: All reproductive-age females (15–49 years) visiting prenatal and gynecology clinics or hospitalized for delivery or obstetrical/ gynecological problems and hemodynamically stable were offered enrolment. Pregnant and postpartum ladies were included.

Exclusion Criteria: All women beyond 49 years of age and below 15 years. Those who did not consent or were in unstable/critical condition were excluded.

RESULTS

The mean age of the study group was 29.55±6.94 S.D. (95%CI 28.87-30.22). All participants except one (17 years) were ≥18.

Of 405 women, 180 (44.4%) were vaccinated, and 225 (55.55%) were non-vaccinated. The mean age of vaccinated women was 30.69 years ±7.33 (CI; 29.62-31.77) versus 28.63 ± 6.5 years (CI: 27.78-29.5) in non-vaccinated. Statistically, this difference was significant (p<0.05). Uneducated and lower education grades, i.e., upto grade 10 (matric), were significantly higher in the non-vaccinated group. (Table 1)

Two hundred sixty-six (65.7%) women were pregnant, and 139 (34.3%) were nonpregnant.

180 (44.44%) women were vaccinated versus 225 (55.55%) non-vaccinated. In those vaccinated, nonpregnant women were in significantly higher proportion compared to pregnant; 46.66% versus 24.44 p<0.05.

Table No. 1: Demographic Characteristics of Study Group.

Variables	Vaccinated n=180 (%)	Non Vaccinated n=225 n (%)	Total N %	p-value	Strength of Association (Phi Cramer V)
A.G.E.					
15-24years	34 (18.88)	74 (32.88)	108(26.66)	0.002	0.193
25<34years	96 (53.3)	103 (45.77)	199 (49.13)		
35<44years	36 (20)	43 (19.11)	79 (19.50)		
≥45 years	14 (7.77)	5 (2.22)	19 (4.69)		
PARITY					
●Nullipara or unmarried	54 (30)	55 (24.44)	109 (26.91)	0.014**	0.173
●●Para1 -4	112 (62.22)	139 (61.77)	251 (61.97)		
●● Para 5<8	11 (6.11)	30 (13.33)	41 (10.12)		
●● Para =or>8	3 (1.66)	01 (0.44)	4 (0.98)		
MONTHLY INCOME(PKR)*					
< 30,000	81 (45)	132 (58.6)	213 (52.59)	0.05	0.163
30,000-50,000	63 (35)	50 (22.22)	113 (40.24)		
>50,000-70,000	18 (10)	23 (10.22)	41 (10.12)		
70,000-100,000	9 (5)	8 (3.5)	17 (4.19)		
>100,000	2 (1.11)	1 (0.44)	3 (0.74)		
EDUCATION					
Uneducated	38 (21.11)	55 (24.44)	93 (22.96)	0.014	0.188
Primary/informal education	39 (21.66)	45 (20)	84 (20.7)		
Matric	35 (19.44)	73 (32.44)	108 (26.66)		
Intermediate	39 (21.66)	30 (13.33)	69 (17.03)		
Graduate	23 (12.77)	17 (7.55)	40 (9.8)		
Master's degree	06 (3.33)	05 (2.22)	11 (2.71)		

*Missing information about income for 7 vaccinated and 11 non-vaccinated subjects.

** p-value calculated by Fisher exact est

Table No. 2: Qualitative Features of Study Groups.

Characteristic	Vaccinated N=180 N (%)	Non vaccinated N=225 N (%)	Total N %	P- value	Strength of association (phi cramer v)
NON PREGNANT	84 (46.66)	55 (24.44)	139(34.32)	0.000	0.233
PREGNANT	96 (53.3)	170 (75.5)	266(65.67)	0.000	0.233
With risk factors for Covid	44 (24.44)	46 (20.44)	90 (22.22)	0.336	0.048
Family member hospitalized for covid or died	69 (38.33)	63 (28)	132(32.59)	0.033	0.110
She suffered symptoms of covid infection	39 (21.66)	43 (19.11)	82(20.24)	0.788	0.054
Had information about Covid vaccination	119 (66.11)	64 (28.44)	183(45.18)	0.000	0.388
Had information about tetanus vaccination	70 (38.88)	21 (9.3)	91 (22.46)	0.000	0.367
Had prior tetanus immunization during Pregnancy.	134 (74.4)	104 (46.22)	238(58.76)	0.000	0.327

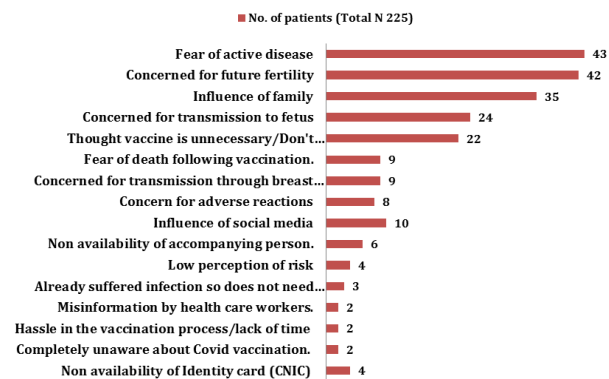


Figure No. 1: Reasons for Non-vaccination in Study Subjects.

The most frequent reasons for not getting vaccinated were concern/fear of getting an active disease (19.11%, n=43) and concern for adverse effects on future fertility (18.66%,n=42). It was followed by the influence of family in 15.55% (n=35). Another 9.77%, n=22, thought the vaccine was unnecessary, and they did not believe it.

In 39.55% (n=89) of non-vaccinated, it was not the woman's decision, as she did not take it.

22.2% (90) of women had risk factors for convection. Of these, 10.86% (44) were vaccinated vs 11.35% non-vaccinated.

DISCUSSION

Following the initiation of Covid vaccine campaign in February 2021 in Pakistan, up until now, 339,835,733 vaccine doses have been administered.¹⁰

Our study's results revealed significant differences in vaccination status for different age and parity groups. (p<0.05) A greater proportion of younger females, 15-24 years, were non-vaccinated compared to higher age groups. Our results are consistent with a large

population survey of 13128,525 women of reproductive age from the United Kingdom, which also described a higher proportion of the older age groups, i.e., 40<49 years, as being vaccinated (85.5 %) compared to younger age groups¹¹. In a multiparous group of women with parity level, 5<8 higher proportion (13.33 % versus 6.11) of non-vaccinated women was found. However, despite being statistically significant, their relative proportion was less compared to parity <5, which comprised >88% of all women. Education higher than matric (grade 10) was significantly different p,0.05, with 37.76% vaccinated versus 23% non-vaccinated. A survey from the United States reported education to be among the influencing factor for willingness to get Covid vaccination.¹²

The monthly family income of 52.59% of participants was < 30,000. Among these majority were non-vaccinated (n=132, 58%), and a significant difference was revealed in vaccinated and non-vaccinated study subgroups concerning various income levels. Most of the non-vaccinated group members had a monthly family income of <30,000 per month. A 2022 post-vaccination survey of 1325 male and female respondents >40 years from Punjab described 30.3% of subjects having income <20,000, followed by 44.7% with income 20000<50,000, with more subjects vaccinated in this income group. The difference across income levels was highly significant among vaccinated and non-vaccinated groups in that survey.¹³ There was a significant difference in participants regarding pregnancy status (p<0.01), as most pregnant women were non-vaccinated. This result is consistent with Desmond Sutton et al. findings from a survey published in the American Journal of Obstetrics & Gynaecology, with 44.3% vaccinating 216 pregnant women (out of 1012 respondents). Another online survey of reproductive-age female health workers by Townsel et al. from the United States reported correlating

observations that pregnant women were twice likely to refuse & 6 times more likely to delay vaccination.¹⁴

A higher proportion of those with family members admitted with Covid or who died of Covid were vaccinated than non-vaccinated. This difference was highly significant, $p < 0.05$. However, no significant difference existed for those who experienced any symptoms of Covid infection. Information about tetanus vaccination status was obtained because it is among recommended vaccinations during Pregnancy and is a routine part of antenatal care to offer this vaccination. Most women vaccinated also had information about tetanus vaccination and were immunized against Tetanus during Pregnancy, compared to non-vaccinated for Covid; this difference was highly significant.

A hospital-based survey of pregnant women from Punjab reported that 49% of women did not have an independent decision to choose not to vaccinate.¹⁵ We also found 39.5% of women did not have their independent decision for not getting vaccinated as the decision was taken by the husband or family senior.

In our study, the most typical reason for non-vaccination was a concern about getting an active disease following vaccination, 19.11%, whereas 4% of subjects expressed even fear of death following vaccination. Another 19.11% ($n=43$) of non-vaccinated subjects were concerned about adverse fertility effects. Family influenced the following frequent reasons in 16.44% ($n=37$) and concern for transmission to the fetus during Pregnancy in 12% ($n=24$). Transmission through breastfeeding was the concern in 4%. A significant number, i.e. 22 (9.77%), thought the vaccine was unnecessary as they did not believe in any role of vaccination.

Global surveys have explored vaccine intent among people. A survey from Saudi Arabia comprising 81% males showed majority had satisfactory knowledge and positive attitude towards Covid-19 vaccination.¹⁶ However, acceptance of vaccination in women seems different. So far, studies are minimal for Covid vaccination of reproductive age (15-49 years) women. International studies in pregnant women have shown low vaccine uptake. In their study, Gutierrez S et al. reported that being women, younger age, less education and having African American or Hispanic ethnicity were associated with non-vaccination.¹⁷ Our results similarly found younger age in the non-vaccinated group. A cohort study from the United Kingdom by Blackwell et al. also showed only one-third of pregnant women accepted Covid vaccine, and vaccine uptake was significantly lower in Asian ethnicity and lower socioeconomic profile.¹⁸ Systemic review of 32 studies also reported low vaccine acceptance among pregnant women in the United States, in whom low education, younger age and refusal of Influenza vaccination were found to be associated.^{18,19} This review also concluded

that studies support the safety of Covid vaccine in pregnant women and newborns. Another reason for non-vaccination found in our study participants was their viewing it as unnecessary since they did not believe in Covid or vaccination as a preventive strategy. A telephonic postvaccination survey of >1325 subjects from Punjab also reported this reason given by 11.7% of subjects.¹³

We also sought information about previous tetanus vaccination as this is a routinely offered vaccine during Pregnancy and is most relevant in reproductive age.

Our study highlights the need to educate our people about the role of vaccination in preventing the spread of disease in the community and address their concerns for fertility and adverse effects on fetuses and neonates. This will additionally help in sensitizing society towards women's empowerment for their health choices.

CONCLUSION

Significant proportion of our reproductive-age women is non-vaccinated due to their concerns about getting diseases following vaccination, adverse effects on fertility, transmission to the fetus during Pregnancy and influence by family. There is a need to educate people and address their concerns to expand vaccine coverage for reproductive-age women.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. World Bank staff estimates based on age/sex distributions of United Nations Population Division's World Population Prospects: 2022 Revision. Available from <https://data.worldbank.org/indicator/SP.POP.TOTL.FE.ZS?locations=PK>
2. McClymont E, Albert AY, Alton GD, Boucoiran I, Castillo E, Fell DB, et al. CANCOVID-Preg Team. Association of SARS-CoV-2 Infection During Pregnancy With Maternal and Perinatal Outcomes. *JAMA* 2022;327(20):1983-1991.
3. Purvis RS, Ayers BL, Rowland B, Moore R, Hallgren E, McElfish PA. "Life is hard": How the COVID-19 pandemic affected daily stressors of women. *Dialogues Health* 2022;1:100018. doi:

- 10.1016/j.dialog.2022.100018. Epub 2022 Jun 3. PMID: 36776415; PMCID: PMC9162780.
4. Royal College of Obstetricians & Gynaecologists. Coronavirus (COVID-19), infection in pregnancy. Dec 2022. Online. Retrieved from: <https://www.rcog.org.uk/guidance/coronavirus-covid-19-pregnancy-and-women-s-health/coronavirus-covid-19-infection-in-pregnancy/>
 5. World Health Organization. Achieving-70 percent covid-19-immunization-coverage-by-mid-2022. [Online]accessed 03rd Jan2023.Available from <https://www.who.int/news/item/23-12-2021-achieving-70-covid-19-immunization-coverage-by-mid-2022>
 6. American College of Obstetricians & Gynaecologists. Covid-19 vaccination considerations for obstetric-gynaecologic care. Practice advisory DOI: <https://doi.org/10.1016/j.ajog.2021.03.035>
 7. Razzaghi H, Masalovich S, Srivastav A, Black CL, Nguyen KH, de Perio MA, et al. COVID-19 Vaccination and Intent Among Healthcare Personnel, U.S. *Am J Preventive Med* 2022;62(5): 705–7157.
 8. Ghamri RA, Othman SS, Alhiniah MH, Alelyani RH, Badawi AM, Alshahrani AA. Acceptance of COVID-19 Vaccine and Associated Factors Among Pregnant Women in Saudi Arabia. *Patient Prefer Adherence* 2022;16:861-873.
 9. Premji SS, Khademi S, Forchheh N, et al. Psychological and situational factors associated with COVID-19 vaccine intention among postpartum women in Pakistan: a cross-sectional study. *BMJ Open* 2022;12:e063469. doi:10.1136/bmjopen-2022-063469
 10. World Health Organization. World Health Emergency dashboard. WHO (Covid 19)home page. Country. Available from: <https://covid19.who.int/region/emro/country/pk>
 11. Magee LA, Molteni E, Bowyer V, Bone JN, Boulding H, Khalil A, et al. Resilient Study Group. National surveillance data analysis of COVID-19 vaccine uptake in England by women of reproductive age. *Nat Commun* 2023;14(1):956. doi: 10.1038/s41467-023-36125-8.
 12. University of Southern California. Education is now a bigger factor than race in desire for Covid-19 vaccine. The Evidence Base.Covid-19: Informing policy in health Economics & well being. Online epub 21 March 2021.Available from: <https://healthpolicy.usc.edu/evidence-base/education-is-now-a-bigger-factor-than-race-in-desire-for-covid-19-vaccine/>
 13. Zakar R, Momina AU, Shahzad S, Hayee M, Shahzad R, Zakar MZ. COVID-19 Vaccination Hesitancy or Acceptance and Its Associated Factors: Findings from Post-Vaccination Cross-Sectional Survey from Punjab Pakistan. *Int J Environ Res Public Health* 2022;19(3):1305. Published 2022 Jan 24. doi:10.3390/ijerph19031305 Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8835289/>
 14. Townsel C, Moniz MH, Wagner AL, Zikmund-Fisher BJ, Hawley S, Jiang L, et al. COVID-19 vaccine hesitancy among reproductive-aged female tier 1A healthcare workers in a United States Medical Center. *J Perinatol* 2021;41(10):2549-2551. doi: 10.1038/s41372-021-01173-9.
 15. Mustafa ZU, Bashir S, Shahid A, Raees I, Salman M, Merchant HA, et al. COVID-19 Vaccine Hesitancy among Pregnant Women Attending Antenatal Clinics in Pakistan: A Multicentric, Prospective, Survey-Based Study. *Viruses* 2022, 14, 2344. <https://doi.org/10.3390/v14112344>
 16. Al-Zalfawi SM, Rabbani SI, Asdaq SMB, Alamri AS, Alsanie WF, Alhomrani M, et al. Public Knowledge, Attitude, and Perception towards COVID-19 Vaccination in Saudi Arabia. *Int J Environ Res Public Health* 2021;18(19):10081. doi: 10.3390/ijerph181910081.
 17. Gutierrez S, Logan R, Marshall C, Kerns J, Diamond-Smith N. Predictors of COVID-19 Vaccination Likelihood among Reproductive-Aged Women in the United States. *Public Health Reports* 2022;137(3):588-596.
 18. Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, et al. COVID-19 vaccination during pregnancy: coverage and safety. *Am J Obstet Gynecol* 2022;226(2):236.e1-236.e14. doi: 10.1016/j.ajog.2021.08.007.
 19. Rawal S, Tackett RL, Stone RH, Young HN. COVID-19 vaccination among pregnant people in the United States: a systematic review. *Am J Obstet Gynecol MFM* 2022;4(4):100616. doi: 10.1016/j.ajogmf.2022.100616.