

## FACTORS AFFECTING WILLINGNESS TO RECEIVE COVID-19 VACCINE AMONG ADULTS ATTENDING PRIMARY HEALTH CARE CENTERS IN MOSUL CITY

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### ABSTRACT

There are many Coronaviruses are a type of virus. different kinds, coronavirus identified in 2019, SARS-CoV-2, has caused a pandemic of respiratory illness, called COVID-19. The COVID-19 vaccines has been made available for emergency use in Iraq & willingness to receive the vaccine may be affected by varying factors across the country. Therefore, this study aimed to demonstrate the factors that affects willingness to receive the vaccines among Iraqi adults. A population based cross-sectional study was conducted in a sample of 300 adults (age 18 years and older). **Aim of the study:** The aim of the study is to asses factors affecting willingness to receive COVID-19 vaccine among adults attending PHCCs in Mosul city To demonstrate the sociodemographic factors in sample size. To evaluate the different variants and its effects on willingness to receive COVID-19 vaccine. **Methodology:** A descriptive cross sectional study design with Data collection and analysis was carried out in Mosul city that is located in the north of Iraq. A total of (300) cases were collected over six months period starting from 1<sup>st</sup> February to 30<sup>th</sup> July 2022. Descriptive data analysis was applied using SPSS version: 25 to describe the basic feature of data, and the prevalence have been calculated in order to describe the characteristic of study sample. **Results:** Vaccination with COVID-19 vaccines was more prevalent in the age group (26-35) & more frequent infemales than in males, also graduated people about half no. of the all vaccinated people. Half of the all vaccinated people were observed among self- employed, whereas more than three fourths of people who receive the vaccine are married & in less than a quarter of them are single people, at that time more than ninety percent of the all vaccinated people lives in urban area, and people who was previously infected with COVID-19 are more than twice time in number than those who previously not infected with COVID-19, at meaning time those who receive the vaccines & having a family member being COVID-19 positive are more than twice in number than those without having a family member being COVID-19 positive and those persons who receive COVID-19 vaccines & suffering from an impact of COVID-19 sequelae on their family are few compared to those not suffering from an impact of COVID-19 on their family, and who having perceived risk of COVID-19 infection are about one third in number compared to those having no perceived risk of COVID-19 infection who are about two third, and finally doctor suggestion to receive the vaccine makes people to be doubled in number in relation to those who receive the vaccine without doctor suggestion. **Conclusion:** Being a young age 26-35 years old married female having 3 or more child graduated self-employed living in urban area having no chronic diseases & previously infected with COVID-19 with family member 60+ age & having a family member being COVID-19 Positive with no impact of COVID-19 on the family having no perceived risk of COVID-19 infection plus doctor suggestion all that characteristics motivates people to receive vaccines.

### INTRODUCTION

COVID-19 is a disease caused by the SARS-CoV-2 virus, COVID-19 can cause mild to severe respiratory illness, including death, Coronaviruses are a family of viruses that can cause respiratory illness in humans.<sup>[1]</sup>

Coronaviruses derive their name from the Latin word -coronall meaning crown, The name refers to the unique appearance of the virus under an electron microscope as round particles with a rim of projections resembling the solar corona.<sup>[2]</sup> Coronavirus virology — Coronaviruses

are enveloped positive- stranded RNA viruses, Full-genome sequencing and phylogenetic analysis indicated that the coronavirus that causes COVID-19 is a betacoronavirus in the same subgenus as the severe acute respiratory syndrome (SARS) virus (as well as several bat coronaviruses), but in a different clade.<sup>[3]</sup> COVID-19 vaccines are effective at preventing people from getting sick, COVID-19 vaccines are highly effective at preventing severe illness, hospitalizations, and death so, getting vaccinated is the best way to slow the spread of SARS-CoV-2, the virus that causes COVID-19, CDC recommends that everyone who is eligible stay up to date on their COVID-19 vaccines, including people with weakened immune systems, people who have a condition or are taking medications that weaken their immune system may not be fully protected even if they are up to date on their COVID-19 vaccine.<sup>[4]</sup> A booster dose is recommended to extend the protection of COVID-19 vaccines. Doctor do not know yet how long immunity will last after getting a booster. Trials are happening now to find this out.<sup>[6]</sup> Vaccines are the safest way to prevent infectious diseases. They teach immune system (body's natural defenses) how to protect from a specific virus.<sup>[5,6]</sup> Getting different vaccines: One may be offered a different vaccine for second dose or booster dose to the one originally had, for example, one may get a booster dose of Pfizer vaccine after getting AstraZeneca vaccine for first 2 doses and So far, there have been no concerns about serious side effects with this option, but some side effects may be more common if one get a different vaccine from the one got previously, for example, pain, fever, headache and fatigue, These side effects do not last long and studies have found that the immune response after getting different vaccines maybe as good as getting the same vaccine and in some cases, it can be better so people can choose this option because it has been advised by National Immunization Advisory Committee (NIAC) in Ireland, it is not yet approved by European Medicines Agency (EMA), at the moment, the EMA has only approved the use of 2 doses of the same vaccine for first round of vaccination.<sup>[6]</sup>

**Genetic/mRNA vaccines & safety:** mRNA vaccines are newly available for us as the public to use, but researchers have been working on them for a very long time (Researchers have been studying and working on mRNA vaccines for decades), as the technique was discovered in 1987 by Robert Malone, The genetic/mRNA vaccine has been widely politicized long before first COVID-19 vaccine was available, When one just look at the research, they are incredibly safe but many people worry that genetic vaccines will change the genetic code, but that simply not true, These vaccines use mRNA which never enters the nucleus of the cell where the DNA (genetic material) is stored, so it cannot change or influence the genes.<sup>[7]</sup>

**MATERIALS & METHODS:Ethical Committee:** The official administrative agreement have been obtained

from MOH, DOH in Nineveh before conduction of the study. A verbal consents have been taken from each participant after a short explanation of the objective of this study.

**Study setting:** The study was conducted in Mosul city that is located in the north of Iraq, Mosul is the second biggest city (by no. of population) in Iraq after the capital it is the center of Nineveh Governorate A descriptive cross sectional study design, have been chosen in order to achieve the objective of the present study. Data collection and analysis was carried out over six months prostrating from 1<sup>st</sup> February 2022 to 30<sup>th</sup> July 2022 with three visits for each PHCC. The study include (300) adult visitors either male or female who visits the PHC center attending to receive COVID-19 vaccine or previously completed COVID-19 vaccine shots. PHC center adults visitors, who attending to receive COVID-19 vaccine or previously completed COVID-19 vaccine shots males and females ages 18 years old and above.

**The Exclusion criteria:** Patient who is not willing to receive COVID-19 vaccine. Patient with age less than 18 years old, Patient who is medically contraindicated to receive COVID-19 vaccine for any reason e.g. now he has an active infection or having sensitization to vaccine A randomized method with random collection from adults visitors to PHC center, who attending to receive COVID-19 vaccine or previously completed COVID-19 vaccine shots males and females ages 18 years old and above. Data were obtained by using a specially designated questionnaire form in order to achieve the objectives of the study. A questionnaire were in English language. It contain in regard to gender, age group, education, occupation, marital status, number of children, place of residence, family member age 60+ age, history of chronic disease, history of being COVID-19 positive, history of having family member being COVID-19 positive, has impact of COVID-19 pandemic on family, perceived risk of COVID-19 infection, comorbidity and if doctor suggest.

**Results Distribution of vaccinated people according to age & gender:** Table below illustrated the distribution of vaccinated people against COVID-19 according to age and gender. It is clear that vaccinated people was more frequent in the age group 26-35 (34.7%). Nevertheless vaccinated people were not frequent in the age group 56 & above (11.7%). Also the frequency of vaccinated people was more frequent in females (62.7%) about two third of the total vaccinated, while vaccination in males is much lower than in female (37.3%) nearly one third.

**Distribution of vaccinated people with COVID-19 vaccine according to their age & gender.**

Age category (years)	No. of vaccinated people	percentage of vaccinated people %
18-25	36	12.0%
26-35	104	34.7%
36-45	74	24.7%
46-55	51	17.0%
56 & above	35	11.7%
Total	300	100.0
Gender		
Male	112	37.3%
Female	188	62.7%
Total	300	100.0

**Distribution of vaccinated people with COVID-19 vaccine according to occupation:** Table below demonstrated the Distribution of vaccinated people with COVID-19 vaccine according to their occupation (job), it is evident from the table that around half of the all vaccinated people were observed among self-employed (49.0%), and nearly one third of all vaccinated people are gainers, on the other hand lower in un-employed by rate of (8.3%), & the lowest rate seen in the students (7.0%).

**Distribution of vaccinated people with COVID-19 vaccine according to occupation.**

Occupation	Number	Percentage %
Student	21	7.0%
Civil servant	107	35.7%
Self-employed	147	49.0%
Unemployed	25	8.3%
Total	300	100.0

**Distribution of vaccinated people with COVID-19 vaccine according to marital status & no. of children:** Table below show the Distribution of vaccinated people with COVID-19 vaccine according to marital status & no. of children and it is clear that more than three fourths (77.7%) of people who took the vaccine are married & in less than a quarter (22.3%) of all vaccinated people are single people, on the other hand nearly half of the people who received the vaccine (46.0%) having three or more than three child & (30.7%) have no children with the rest (23.3%) having 1-2 child.

**Distribution of vaccinated people with COVID-19 vaccine according to marital status & no. of children.**

Marital status	Number	Percentage%
Single	67	22.3%
Married	233	77.7%
Total	300	100.0
No. of children		
No children	92	30.7%
1-2 child	70	23.3%
3 child & above	138	46.0%
Total	300	100.0

**Distribution of vaccinated people with COVID-19 vaccine according to place of residence:** In table below as we see in the following that more than ninety percent of the all vaccinated people with COVID-19 vaccine lives in urban area (92.3%), while few of people who get the vaccine lives in rural area (7.7%).

**Distribution of vaccinated people with COVID-19 vaccine according to place of residence.**

Place of residence	Number	Percentage%
Urban	277	92.3%
Rural	23	7.7%
Total	300	100.0

**Distribution of vaccinated people with COVID-19 vaccine according to their personal medical history:** By taking a look to table below show that people who did not have chronic diseases and took COVID-19 vaccine forming about twice time in number 198 cases (60.0%) than those people who took the vaccine & having chronic diseases (34.0%), and people who was previously infected with COVID-19 and took the vaccine are more than twice time in number (70.3%) than those who previously not infected with COVID-19 & took the vaccine (29.7%).

**Distribution of vaccinated people with COVID-19 vaccine according to personal medical history.**

History of chronic	Number	Percentage %
Age		
Yes	156	52.0%
No	144	48.0%
Total	300	100.0
History of having family Member being COVID-19 Positive		
Yes	218	72.7%
No	82	27.3%
Total	300	100.0
Has impact of COVID-19 on Family		
Yes	74	24.7%
No	226	75.3%
Total	300	100.0

**Distribution of vaccinated people with COVID-19 vaccine according to perceived risk of COVID-19 infection & if doctor suggest to take the vaccine:** In table below obviously show that people who receive COVID-19 vaccine & having perceived risk of COVID-19 infection are about one third in number (39.0%) in comparing to those who took the vaccine but having no

perceived risk of COVID-19 infection about two third (61.0%),but fortunately doctor suggestion to take the vaccine makes people to be doubled in number (67.3%) in relation to those who took the vaccine without doctor suggestion (32.7%).

**Distribution of vaccinated people with COVID-19 vaccine according to their perceived risk of COVID-19 infection & if doctor suggest to take the vaccine.**

Perceived risk of COVID-19 infection	Number	Percentage %
Yes	117	39.0%
No	183	61.0%
Total	300	100.0
	If doctor suggest	
Yes	202	67.0%
No	98	32.7%
Total	300	100.0

**Discussion Corona virus:** The 2019 novel coronavirus has the potential to be a global pandemic.COVID-19 vaccine introduced to fight this virus spread so, willingness is a critical factor to take the vaccination decision. This study focused on factors affecting willing to receive the vaccine similar study done in Bangladesh.<sup>[8,9]</sup> It is clear that vaccinated people was more prevalent in the age group (26-35) 104 cases (34.7%). Nearly that result seen by (Abu-Hena) And higher in this age group in Saudi Arabia study of the 658 participants, 286 (43.4 %) were aged 26–35 years. (10) vaccinated people were not frequent in the age group 56 & above 35 (11.7%), these low results seen by Meredith Freed,showing only 16% of Black older adults and 19% of Hispanic older adults have been vaccinated in Washington State versus 23% of all White adults 65 and older have received at least one dose of the vaccine.<sup>[11]</sup> Another studyrevealed only 19.7% of people old aged in China have received a COVID-19 vaccine boosters, and just 50.7% of that age group have completed their primary vaccinations, said Zeng Yixin.

percentage of females than males have received a COVID-19vaccine in CANADA.<sup>[13]</sup> But in Saudi Arabia a study of the 658 participants, 312 (47.4%) were female.<sup>[10]</sup> Other study revealed that from 408 cases slight majority of the study participants were male (n = 210, 51.5%).<sup>[13]</sup> An increasing in vaccination against COVID-19 by increasing educational level of the people, the maximum vaccination rates among graduated people with 149 (49.7%) almost same thing explored by Kyla Thomas and Jill Darling in USC Leonard D. Schaeffer Center for Health Policy & Economics that the survey show 76% of U.S. adults with at least a bachelor’s degree had been vaccinated or planned to get vaccinated, compared to just over half of adults (53%) with less education.<sup>[14]</sup> A study by LINDSAY M. MONTE show the unvaccinated Adults are Less Educated, They had lower levels of education, people who had received at least one dose were twice as likely as the unvaccinated in a college degree or higher.<sup>[15]</sup> A same results seen by Iva Šidanin, Biljana Ratković Njegovan and Bojana Sokolović tha by over 68% of postgraduate students at the University of Singapore, 76.3% of students from China, as many as 80% of Canadian public university students and 81.6% of Italian university students were ready to be vaccinated, as well as 89.4% of undergraduate students in India, while the Middle East is among the regions with the lowest vaccine acceptance rate in the world.<sup>[16]</sup> The Distribution of vaccinated people with COVID-19 vaccine according to their occupation (job), it is evident thataround half of the all vaccinated people were observed among self-employed 147 (49.0%) and the main reason for that it was obligatory by government of Iraq for employers to take the vaccine and nearly one third of all vaccinated people are gainers, on the other hand lower rates in un-employed by rate of 25 (8.3%) also a study done by Wendy C.Kinga MaxRubinstein Alex Reinhart RobinMejia show that COVID-19 vaccine increased Jan-May from 74% to 81% in employed adults 18–64, In May, and deceased less than

That report COVID-19 vaccinations for people ages 60 and older, two states (Alaska and Indiana) report vaccinatingmore than 41% of people 60 and older. The share of adults 60 and older who have received at least one dose ranges from 49% in Alaska to 21% in Oregon.<sup>[11]</sup> In relation to gender also the prevalence of vaccinated people was more frequent in females 112 (62.7%) about two third of the total vaccinated, while vaccination in males is much lower than in female (37.3%) nearly one third that results found Jacqui Stevenson and Sagri Singh United Nations University in Thailand where 36% are male, but that at the country level, there are some significant differences, including Yemen, where 93% of people with one dose are male, in terms of vaccine population coverage, in five countries reporting this data coverage is As well as other study more than 5% higher in males than females.<sup>[12]</sup> done by Public Health Agency of Canada said a greater

65% in construction/extraction, installation /maintenance /repair, farming (gainer).<sup>[17]</sup> Another study by Holly Ellyatt employers are facing mandatory COVID vaccination or no job show greater desire by employers to receive COVID vaccine due to The question of one's vaccination status is becoming increasingly relevant and in an increasing number of a condition of employment.<sup>[18]</sup>

Vaccinated people with COVID-19 vaccine according to marital status & no. of children and it is clear that more than three fourths 232 (77.7%) of people who receive the vaccine are married & in less than a quarter 67 (22.3%) of all vaccinated people are single people. A study by LINDSAY M. MONTE in According to the U.S. Census Bureau's newest phase of the experimental Household Pulse Survey (HPS) show the same preference in vaccinated people with COVID-19 vaccine who are Single people They were much less likely than vaccinated adults to be married (46% are single versus 56% who are married).<sup>[15]</sup> But in other study in Saudi Arabia by Mohammed AL-Mohaithef, Bijaya Kumar Padhi and Soukaina Ennaceur show that the study participants from 658 participants 326 (49.5%) were married respondents.<sup>[10]</sup> In this last mention study within Saudi people according to relation of vaccination to numbers of children High responses were from respondents living in large-sized families (high number of children) (66.4%) compared to low- sized families (low children numbers). (37.4%).<sup>[10]</sup> in families with no children & medium vaccination rate in large size families > 3 children 24%.<sup>[16]</sup> In this study more than 90% of the all vaccinated people with COVID-19 vaccine lives in urban area 277 (92.3%), while few of people who get the vaccine lives in rural area 23 (7.7%). A study done in United States by Ryan Saelee, PhD Elizabeth Zell, results near this study results in COVID-19 vaccination in rural areas (58.5%) was lower than that in urban counties (75.4%) which overall, with similar patterns across age groups and sex.

## CONCLUSIONS

The present study shows that that vaccinated people with COVID-19 vaccine was more prevalent

1. In young age group 26-35. The maximum vaccination rates seen among graduated people.
2. It is clear that more than three fourths of people who receive the COVID- 19 vaccine are married.
3. Nearly half of the people who received the vaccine having three or more than three children More than ninety percent of the all vaccinated people with COVID-19 vaccine lives in urban
4. Areas & The people who was previously infected with COVID-19 and receive the vaccine are more than twice time in number People who received COVID-19 vaccine & having perceived risk of COVID- 19 infection
5. Are about half in number in comparing to those who receive the vaccine but having no perceived risk of COVID-19 infection.

Doctor suggestion to take the vaccine makes people to be doubled in number in relation to the number of people who receive the vaccine without doctor suggestion

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