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RESEARCH ARTICLE
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PUBLIC CONCERN TO COVID-19 NON VACCINATION STATUS IN DISTRICT PESHAWAR, KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT

BACKGROUND : The pandemic of COVID-19 impelled the development of a vaccine to unfold the chain of spread of disease.Personal hygiene,social distancing and Personal Protective Equipment Added by anti SARS-CoV2 vaccines.There were rumors and myths about vaccines.A study was needed to evaluate the public interest and associated factors toward vaccination status .

OBJECTIVES: To identify the components and frequency of non-immunization of COVID-19 in Peshawar.

METHODS AND MATERIALS : An analytical crossectional research study was conducted in Peshawar district in last six months of 2022.A sample of 408 male and female subjects were randomly selected from houses through toss method. Were directly interviewed by researcher .

RESULTS :A total of n-363 (88.9%) were found immunized and n-45 (11.0%) were not immunized against covid-19. UN-vaccinated Rural residents were n-27 (60%).The n-373 (91.4%) respondents were not accepting their covid-19 infection.The n-239 (58.5%) respondents were disagreed to pay for vaccines.The n-367 (89.9%) subjects having good practice to motivate friends and families for anti covid-19 vaccination and n-373 (91.4%) were interested to be vaccinated.The Non-vaccinated respondents with financial status of Pakistani rupees more than 30,000 per month were n-28 (62.2%).The n-28 (62.2%) Employed and n-34 (75.5%) Joint families were Non-vaccinated.

CONCLUSIONS : The occurrence of non-immunization to covid-19 was 11.0%. Significantly associated components were monthly income, employment, willingness and practice of the respondents with vaccination status of immunization against covid-19.

INTRODUCTION

The WHO initially learned of the existence of the SARS-CoV-2 in December 31, 2019 after an official update of a series of cases of pneumonia caused by a virus in Wuhan (city),Hubei (province), China [1,2]. Initially this virus was called as "Wuhan virus" and provisionally named as "2019-nCoV" by World health organization. This was identified to be responsible for such outbreak. The "2019-nCoV" virus was officially renamed "SARS-CoV-2" and the disease named as COVID-19 [2]**.** Since December 2019, the COVID-19 has infected people across China, caused a global epidemic and a major public health problem. WHO declared the corona-virus outbreak as a pandemic on January 30, 2020. In Pakistan for the first time they identified two confirmed cases of corona virus disease on February 26, 2020 in Karachi and Islamabad. Since then, March 18, 2020, cases have been recorded across the country. The cases were confirmed through corona virus antigen testing by rapid antigen test (RAT) and PCR [3]. The Corona virus is a group of virus families that cause disease in animals. In Geneva WHO has called this global outbreak as "Corona Virus Disease 2019" (COVID-19) . As its genetic design is very similar to SARS-Co-V1, that's why it was named as SARS-Co-V2 [4].Mistrust towards SARS-C0V-2 vaccines showing a significant challenge in fulfilling the vaccination coverage goal required for population immunity. The only best measure to unfold the chain of corona virus spread is to vaccinate the general population as soon as possible. Many Research surveys are done but through online Questionnaire or by third person and mostly data collected by the respondents feedback only[5].Most of the researches were determining factors and response of people toward vaccination[6] while Our Research study was A cross-sectional analytical survey carried out in district Peshawar from August 15,2022 to November 15,2022 , Data was collected directly from the individuals with finding his actual status of vaccination[6].

In order to ensure the operative vaccination strategy in Pakistan,the factors and public interest toward vaccination status of Anti SARS-CoV-2 vaccines was very important to know. Therefore this study was crucial for the Government, stack holders and policy makers to eliminate all obstacles in the route of vaccination.

OBJECTIVES OF THE STUDY:

1. To determine the Prevalence of non-vaccination of COVID-19 in District Peshawar.
2. To asses the factors associated with non vaccination in people toward anti COVID-19 vaccination in District Peshawar.

MATERIALS AND METHODS

A cross-sectional analytical study design for six months was conducted in District Peshawar, Khyber pakhtunkhwa, Pakistan.Study Population were the people of District Peshawar.It is the 6th largest city of Pakistan, located in the center of Khyber Pakhtunkhwa (province). Peshawar is bordered on the east by Nowshera, west by Jamrud, North by Charsadda and south by Darra Adamkheil. In 2017 census recorded population of Peshawar was 43,31,959, having males were 22,29,681 and females were 21,01,649. Population of the Rural residents was 23,62,136 (54.53%) and the urban population was 19,69,823 (45.47%)[7]. There are nine medical and dental colleges while sixteen universities for all majors fields of study i.e. Science, Management science, General science, Medical, Engineering,Humanities and Agriculture. According to 2017 census the rate of literacy was 55.01% of which 68.78% was male literacy rate while 40.47% was the female literacy rate[8].
Following formula was used for sampling size;

$n = z^2 \times p(1-p)/d^2$

Due to random cluster sampling technique 10% increment is applied therefore sample size is

371+37 = 408

Here,
n = number of people
z = 1.96 (confidence level 95%)
p = prevalence estimate (0.41 or 41%)[10]
d = margin of error (0.05)

Probability cluster sampling technique was used for data collection.Sample of study population was selected through random cluster sampling.As district Peshawar has 93 Union councils of which16 have both rural and urban population[11].Four of them were selected as clusters.These clusters were selected randomly by lottery method.Union councils have known number of houses registered with Lady health supervisor (LHS). One Subject from each house was randomly selected and houses were also randomly selected by a toss from the house numbers of the LHS Register to minimize selection bias.Only one household was face to face interviewed to minimize recall bias. Data was collected via a closed ended researcher-administered structured questionnaire form. All Questions of questionnaire were validated according to previous literatures[12] .The inclusion criteria of study participants was age of 18 years and above while exclusion was mental disorders. Questions about age and general health were asked to insure the inclusion and exclusion criteria

VARIABLES

The outcome variable was vaccinated and Non-Vaccinated for protection against COVID-19.The study subject received partial or complete doses of vaccine was considered vaccinated while the subject received no vaccine was labeled as Non-vaccinated.In the Questionnaire for vaccination status a question was asked "are you vaccinated for anti SARS-CoV2?" , the subject with positive answer was considered vaccinated while the subject with negative reply was Non-vaccinated.The association of Vaccination and Non-vaccination was compared with Attitude,Practice, Family structure, Residential status, Employment, Monthly income and Nationality of the study subjects.
Family structure and type i.e joint/nuclear[13] was taken as it was the part of many studies and family structure has broad effects in our Pakistani Culture.
Current residential state as urban and rural residents have different attitude and practice to Anti Covid-19 vaccination[14].

Employment[15] status was taken as employed and unemployed.Employed group was included Government employees,Non-Government employees, self employed, labors,Farmers,Shopkeepers and All those who were engaged in any sort of technical ,non technical work for income. While unemployed were included House wives and the people who were not engaged in any type of work.
Monthly family income[16] was taken in Pakistani Rupees and study population was divided in two categories i.e Monthly income<30000 thousands per month and Monthly income>30000 thousands.
For determining the attitude of the participants the following Questions were added in the Questionnaire

"Have you ever infected with COVID-19 (without testing) ?"
"Is COVID-19 vaccine essential for us?"[17]
"Have you ever tested positive for COVID-19?"
For determining the practice of the participants the Questions added in the Questionnaire were "Would you want to pay for a COVID-19 vaccine if it is not provided free by the government ?"
"Would you motivate your family and friends to get vaccinated?"[18]
"Would you like to be vaccinated for protection against COVID-19?"[19]

Analysis plan

In qualitative variables frequency and percentages were calculated. For association of independent qualitative variables with the dependent variables, we used chi square test. P value of less than 0.05 was considered as significant. For data entry SPSS 21 was used.

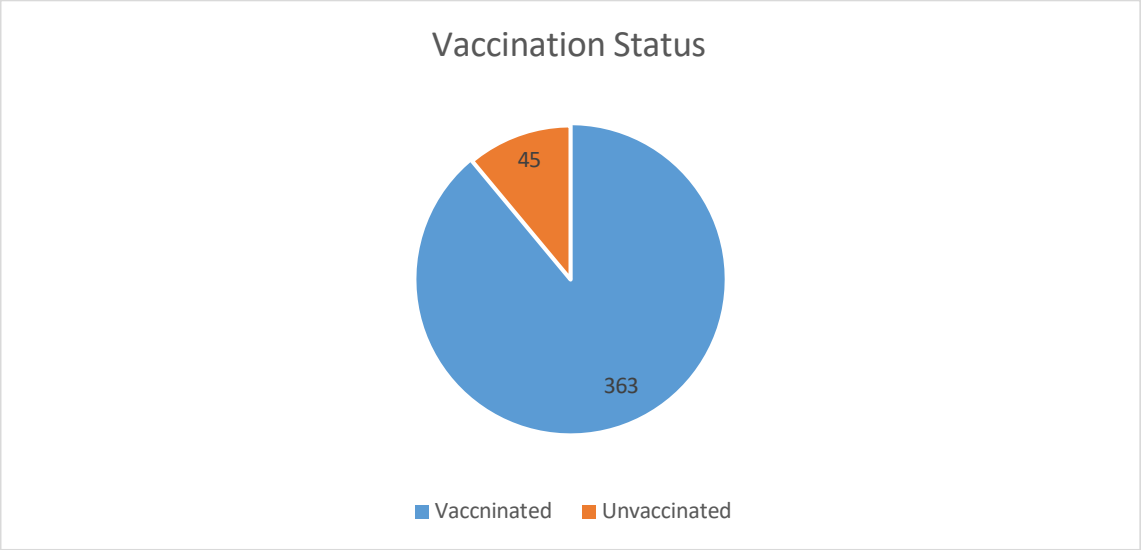
Ethical consideration

All steps and procedures of the research study were carried out according the Institutional ethical research guidelines and ensured the principles for human investigations .Participants were informed about the purpose and procedure of the study and confidentiality of the provided information. Data was collected anonymously.

RESULTS

The overall prevalence of non vaccination toward covid-19 in district Peshawar was found 11.0%

Figure 1



The Attitude and practice of the study subjects is tabulated as in **Table 1**

Questions	Response			
	Yes	percentage	No	percentage
Have you ever tested for COVID-19?	14	3.40%	394	96.50%
Have you ever infected with COVID-19(without testing)?	35	8.50%	373	91.40%
Would you want to pay for a COVID-19 vaccine if it is not provided free by the government?	169	41.40%	239	58.50%
Would you motivate your family and friends to get vaccinated?	367	89.90%	41	10.00%
Would you like to be vaccinated for protection against COVID-19?	373	91.40%	35	8.50%

The attitude of the most participants was poor.Most of the participants of the study sample responded with negative answer for laboratory testing of covid-19 n-394 (96.5%) that they never done any covid-19 testing and screening.More than ninety percent of the respondents were not accepting their covid-19 infection (n-373, 91.4%).More than Fifty percent respondents were disagreed to pay for vaccines (n-239, 58.5%) if one has to pay for vaccines .

The most of the subjects having good practice to motivate friends and families for anti covid-19 vaccination(n-367, 89.9%) and were interested to be vaccinated as well(n-373, 91.4%).

Table,2

Variable		Vaccinated	Non-Vaccinated	Chi square value	P-value
Residence	Urban	169	18	0.45	0.43
	Rural	194	27		
Monthly Income In Rupees	Rs<30000	86	17	3.49	**0.046**
	Rs>30000	277	28		
Employment	Employed	290	28	6.2	**0.012**
	Unemployed	73	17		
Family structure	Joint	246	34	0.79	0.313
	Nuclear	117	11		
Nationality	Pakistani	352	41	2.4	0.07
	Non-Pakistani	11	4		

Rural residents were mainly UN-vaccinated (n-27,60%). The respondents with financial status of Pakistani rupees more than 30000 per month (n-28,62.2%) were not vaccinated.Most of the UN-vaccinated participants in study were Employed(n-28,62.2%) having Joint family structure (n-34,75.5%).

Table,3

Variable		Vaccinated	Non Vaccinated	Chi square value	P-value
Tested for COVID-19?	Yes	14	0	0.822	0.38
	No	349	45		
Infected with COVID-19 (without testing)	Yes	32	3	0.041	0.78
	No	331	42		
Paid COVID-19 vaccine	Yes	165	4	20.58	**0.001**
	No	198	41		
Motivate for vaccination	Yes	356	11	232.03	**0.001**
	No	7	34		
Want to be vaccinated	Yes	355	18	163.24	**0.001**
	No	8	27		

DISCUSSION:

Our research outcomes were Exhibiting extensive immunization coverage compared to a Peshawar study conducted on Covid-19 infected population over a 3-month period in 2022. Non-vaccinated individuals accounted for 57.2%, while vaccinated individuals comprised 42.8%20[7,8]. Since our study encompassed the general population of Peshawar, the prevalence of non-vaccination was only 11%.

A research study published in AGKI of Karachi was conducted from 08,2021 to 12,2021 in Punjab, Sindh, Baluchistan, and Khyber pakhtunkhwa[9]. The prevalence of non-vaccination was 41%, while 59% of participants were vaccinated[10,11]. Our study revealed high immunization coverage, with only

11% remaining non-vaccinated. This data was collected in late 2022, following several severe waves of Covid-19, which altered people's perceptions and beliefs regarding vaccination[12].

Another study, conducted from August 2021 to December 2021, in Islamabad, Punjab, Khyber Pakhtunkhwa and Baluchistan. The prevalence of non-vaccination stood at 41.96%, with 58.04% being vaccinated[13,14]. Our study highlighted a significant coverage, with 89% vaccination and only 11% remaining non-vaccinated. Late in 2022, the third wave of Covid-19 posed a serious threat to non-vaccinated individuals, prompting greater acceptance and coverage due to increased awareness and belief in vaccines[15,16,17].

Research in Saudi Arabia, by Al-Mohaithef, revealed that individuals aged above 45 with university degrees were more willing to be vaccinated against COVID-19[18,19,20]. In our study, participants aged 30 to 40 were predominantly vaccinated, given their qualifications and scientific knowledge of vaccines.

A Canadian Health Survey, conducted in 2021, indicated an 11% prevalence of non-vaccination, with higher coverage among well-qualified, older participants[21,22,23]. Employment, monthly income, willingness and self motivation were significant in the coverage of vaccination goal[24].

CONCLUSIONS :

Results shows significant association of monthly income, employment and practice of the study subjects with vaccination status.

Our study shows high coverage in Pakistan as compared to other studies showing lesser coverage[20].As in this study data was collected in late 2022 after few severe layers of Covid-19 which changed the people,s approach and belief towards vaccination.The results were applicable to the general population of Pakistan.

RECOMMENDATION

Our study is a base for future researches that can explore the attitude and response of the population towards vaccines.This will be helpful in exploration of the ways for decisions and policies for the Government and healthcare systems to address the vaccine coverage in true sense.

Community and individuals sessions may be arranged for dispelling of fake information,rumors and myths.This will reduce the prevalence of Non-Vaccinated of Covid-19 vaccines.

STRENGTH AND LIMITATIONS

There were lesser chances of selection and recall Bias in our study due to study design and large sample size.Results were applicable to the General population.There were few limitations as Resources were limited. The sample population was from District Peshawar only. There was no approach to National incidence management system.

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