

UNDERSTANDING OF COVID-19 VACCINE KNOWLEDGE, ATTITUDE, ACCEPTANCE, AND DETERMINATES OF COVID-19 VACCINE ACCEPTANCE AMONG ADULT POPULATION IN PAKISTAN

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ABSTRACT

Background: The COVID-19 epidemic has wreaked havoc around the world, with the Pakistan being hit hardest. A vaccine provides the best hope for a permanent solution to the epidemic. In March 2020, the World Health Organization (WHO) announced that the epidemic COVID-19, first reported in Wuhan, China in December 2019, had become a global epidemic. Expressing "grave concerns" about the spread of the epidemic, the WHO called on governments to take immediate and comprehensive action to stem the tide. Numerous vaccines against coronavirus (COVID-19) have been approved and distributed globally in different regions. However, the general community's information, attitudes, and perceptions about COVID-19 vaccination are not well understood. Thus, the purpose of this study was to investigate community knowledge, attitudes and perceptions about COVID-19 vaccination in Pakistan. Although many vaccines are being developed and in clinical trials, and at least seven vaccines have been distributed worldwide, the desire to adopt the COVID-19 vaccine in a different country, including Pakistan, poses a great challenge to the world. However, no studies have been conducted in Pakistan on the knowledge, attitudes, acceptance and determination of COVID-19 vaccine acceptance. Therefore, the purpose of this study was to investigate the knowledge, attitudes, acceptance and determinants of acceptance of COVID-19 vaccine in the adult population in Pakistan.

Objectives: The main objective of the study was to assess knowledge, attitudes and acceptance of COVID-19 vaccination and to improve and enhance the coverage and completion of vaccination.

Methods and materials: This is a cross section web based survey. Registered participants were of Pakistani citizenship and were 18 years of age or older. A questionnaire was created using Google Forms. The link was then distributed through various overall WhatsApp groups in Pakistan. To ensure that participants met the criteria for participation, questions about age, education and nationality were included in the questionnaire.

Results: A total of 200 participants enrolled in this study. Most respondents (44.5%) were between the ages of 18-25 and 42 % were in the 26-35 age group. The majority of them said they would vaccinate as soon as possible (88.02%) and delay vaccination by 12.8%. 93.36% of respondents believe that the vaccine should be available for free and 79% of respondents believe that COVID-19 vaccine development. 82.5% participants are concerned about safety and efficacy.

Conclusions: The most important factor in hesitation of vaccines is the mild or serious side effects after immunizations. Vaccine acceptance may increase when additional information about vaccine safety and efficiency becomes available in the public domain.

Keywords: COVID-19, vaccination; hesitancy, knowledge, attitudes, acceptance, vaccine, Punjab, Pakistan

Introduction

Coronavirus is a large family of viruses known to cause illnesses ranging from the common cold to more serious illnesses such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). In 2019, a novel corona virus (COVID-19) was identified in Wuhan, China. It is a new corona virus that was not previously identified in humans. The virus that causes COVID-19 is highly contagious and affects people around COVID-19 worldwide. The number has grown rapidly. The World Health Organization (WHO) issued a COVID-19 on March 11, 2020 was declared a global epidemic.

The first case of corona virus in Pakistan was reported on February 26, 2020. After the rapid spread of the virus in March 2020, the government of Pakistan had decided to lock down, online education system was introduced in schools and colleges, including educational institutions, online work was also started in government and private offices. Businesses, markets, hotels and other wedding ceremonies were also affected during the lockdown. During these two years, the virus had wreaked havoc all over the world, including Pakistan. There was a significant decrease. Following the concerted efforts of medical researchers, the immunization against the virus was introduced in countries around the world in 2021, which resulted in a significant reduction in the number of people infected with the virus. During the last two years, the demand for single and double dose vaccines has continued in Pakistan.

In Pakistan, measures have been taken to ensure effective vaccination at the government level to control the virus during the last two years, which has resulted in a significant reduction in the fourth wave of the virus, the wave is expected. The virus thrives in cold climates, with the fifth wave gaining momentum in Britain, Russia and Georgia. The fifth wave of the virus has revealed subtypes of the Delta virus, which could be dangerous and the number of Corona patients worldwide has exceeded 50 million.

The COVID-19 epidemic has placed a huge burden not only on health services globally but also on the social and economic system. Globally, as of November 11, 2021, there are 251,266,207 confirmed cases of COVID-19, including 5,070,244 deaths, reported to the WHO. As of November 10, 2021, a total of 7,160,396,495 vaccine doses have been administered [1].

The SARS-CoV-2 epidemic created a public health emergency of international concern, and by February 28, 2020, more than 80,000 confirmed cases had been reported worldwide. World Health Organization (WHO) has declared March 11, 2020, a pandemic of the Novel Coronavirus (COVID-19) pandemic [2].

Vaccination is one of the most important advances in public health. Vaccines are life-saving technologies that have been responsible for eradicating smallpox and controlling infectious diseases (such as rubella, diphtheria, and polio) in many parts of the world. For continued success, it is important to maintain a high level of global vaccine coverage. The results of an unprecedented study conducted in countries show that although overall attitudes toward vaccines were positive, confidence in vaccination is weak: a large proportion of respondents who believed in the importance of vaccines protect vaccines Had negative feelings about .The highest level of distrust in vaccine safety was found in the European region, with 41% of respondents in France reporting that they do not believe in vaccine safety. [3]

According to a report by the Pakistan Bureau of Statistics (PBS) 2017, the population of Pakistan is 207.68 mills. Pakistan reported the first case of COVID-19 on February 28, 2020, and since the outbreak began, the national health system has evolved through various interventions applied directly or to control the health and lives of the population. About a year later, on November 12, 2021, the Ministry of Health (MOH) reported a total of 1,279,142 Confirmed cases of SARS-CoV-2 infection and 28,584 total deaths in Pakistan. Outbreaks appear to be exacerbated during this time, with 2.2% access to all causes of deaths [4, 5].

Table 1

	Confirmed Cases	Active Cases	Deaths	Recoveries
AJK	34,501	44	741	33,716
Balochistan	33,383	125	358	32,900
GB	10,400	19	186	10,195
Islamabad	107,249	319	947	105,983
K PK	178,926	1,407	5,786	171,733
Punjab	441,631	7,606	12,967	421,058
Sindh	473,052	13,810	7,599	451,643

Coronavirus (COVID-19) Dashboard NOV, 12, 2021

The CoVID-19 epidemic spread around the world, leading everyone to find solutions, including effective and safe vaccines, to control the virus and minimize its effects. Vaccine hesitation is a complex issue. An important consideration is that vaccine hesitation has developed in response to the complex but ultimately successful history of vaccine science. Vaccines have been successful, turning once-destructive diseases into distant memories. Hesitant parents, as a result, have turned their attention to perceived risks of

vaccination, as few people in developed countries see the consequences of vaccination abandonment [6].

Taking a step further in the fight against vaccine misinformation, Facebook announced on September 4, 2019 that the user's search for vaccine-related content would be directed to either the US Centers for Disease Control and Prevention (CDC) or World Health Organization (WHO) websites. Will be posted on the organization's (WHO) websites. For accurate information about vaccines. Misinformation about vaccines is a major threat to global health that could reverse decades of progress in treating treatable diseases. Many debilitating and deadly diseases can be effectively prevented by vaccines. Measles, diphtheria, hepatitis, polio, cholera, yellow fever, influenza. [7].

Equal access to safe and effective vaccines is essential to eradicate the COVID-19 epidemic, so many vaccines are proven and progress is very encouraging. The WHO is working tirelessly with its partners to develop, manufacture and deploy safe and effective vaccines. [8].

Vaccine use determinants around the world show strong consistency, being associated with a low probability of being infected with menopause or low years of education. Respondents who reported a high level of confidence in information from official sources were more likely to accept the vaccine and consult their employer to do so. Public health authorities need systematic intervention to reduce vaccine reluctance and improve acceptance [9].

There are three vaccines against COVID-19 in the US: Moderna, Pfizer-BioNTech (Pfizer), and Johnson & Johnson / Janssen (Johnson & Johnson). This vaccine is safe and highly effective, especially in preventing serious illness, hospitalization, and death from COVID-19. Tens of millions of doses of the vaccine have been administered in the United States [10].

Global access to a COVID-19 vaccine offers the best hope for tackling the coronavirus epidemic, saving lives and ensuring global economic recovery. WHO strategy for global vaccination against COVID 19 by mid-2022. We must all work together to meet vaccination targets for 40% of the population in each country by the end of this year and by mid 70%. Next year's decision. About 6.5 billion cans had been distributed worldwide by the end of September. Global vaccine production is now around 1.5 billion doses per month, with enough supplies to meet our goals, provided they are distributed evenly. This is not a delivery problem. This is a distribution problem. There is a contract for the remaining 5 billion cans. However, it is important that nutrition occurs where it is needed most – preference is given to parents, healthcare professionals and other high-risk groups [10].

Impressive progress has been made in vaccination, and scientists have been developing various vaccines for a limited time. Unprecedented public and private funding has supported vaccine research, development and production. But there is a dangerous gap between rich and poor countries. In fact, even some rich countries are already talking

about introducing booster vaccines into their populations, like most people in developing countries. Even the medical staff in the first place had not received their first vaccine. Most of the are low-income countries that have received less than 1% of the vaccine to date.

The unequal distribution of vaccines doesn't just infect millions of people with the virus. It also allows deadly species to emerge and return to the world. As diversity continues to grow, even countries with advanced vaccination programs have been forced to reimpose strict public health measures and some have imposed travel restrictions. As a result, the ongoing epidemic is causing a huge difference in the economic situation, with negative consequences for everyone. [11]

October 13, 2020, The World Bank Executive Board today approved a 12 billions dollars package for developing countries to fund the purchase and distribution of vaccines, tests and treatments for COVID-19 to their citizens. The funding, which aims to help vaccinate up to one billion people, is part of the World Bank Group's overall package of up to \$160 billion by June 2021 to help developing countries combat COVID-19 epidemic support. Get help. He added new funding for the World Bank's COVID-19 emergency program, which now reaches 111 countries. This financial package helps signal to the research and pharmaceutical industries that citizens of developing countries also need access to safe and effective vaccines against COVID-19. It will also provide funding and technical assistance to enable developing countries to work with international partners to prepare for large-scale vaccine use [12]

The World Health Organization (WHO) lists public concern or reluctance to vaccinate as one of the top 10 threats to public health worldwide, including diseases such as polio and measles. Because many people are afraid of vaccinations and don't feel safe, they don't use drugs to protect their children from diseases like polio and measles, according to the World Health Organization or maybe they have spread over the years. At the European level, public confidence in vaccines is slowly recovering. In France, where public confidence in the vaccine has been low for decades, surveys found people are now relying on the vaccine again, with 22-30 percent agreeing it would be safe. Confidence in vaccine safety in the UK increased from 47% in May 2018 to 52% in November 2019. However, public confidence in vaccines has declined significantly in Eastern European countries, Poland and Serbia. In Afghanistan, the Philippines, Indonesia, Nigeria and Pakistan as well, the proportion of consensus on vaccine safety increased significantly in 2019 compared to 2015. [13]

Recently, Pakistan has reliably described rates where less than 2% and less than 1,000 patients per day are infected with COVID-19. The general improvement in COVID-19 conditions in Pakistan has resulted in a steady decline in hospital admissions and deaths. As of November, 22, 2021, data from the NCOC showed that 263 people had tested positive for the infection after 33,767 tests. This is the second day in a row the country has reported 300 pollution incidents in a single day.

Problem statement

A COVID-19 vaccine was developed in a short period of time, but the virus is evolving faster than vaccines are spreading around the world. Most are operated in high-income and higher-income countries. If this doses was distributed evenly, it would be enough to feed all the health workers and elderly people in the world. WHO has set a goal that all countries should vaccinate 10% of their population by the end of September. The 56 countries barely included in the global vaccine market have failed to achieve this goal and most of them are in Africa. Even more countries are at risk of missing the WHO target of vaccinating 40% of each country's population by the end of this year and 70% by the middle of next year. The global failure to distribute vaccines equitably affects some of the world's poorest and most vulnerable people. This new form of concern has increased the risk of infection for people who have not been vaccinated in all countries.

Methodology

Study procedures

Punjab is the second largest province of Pakistan after Balochistan with an area of 205,344 sq km (79,284 sq mi). Punjab is the most populous province of Pakistan. According to the 2017 census, the population of the province is 110,012,442. The population density is 540 persons per square kilometer while the national population is 287. This cross-sectional study was conducted in the Punjab province of Pakistan among people above 18 years of age. The data collection period in Punjab province was between **20 July 2021 and 2 November 2021**. Since no study was available on the acceptance rate of COVID-19 vaccine among the people.

Socio-economic variables, behavioral variables, knowledge variables, individual health variables, and intent to accept related variables were all included in the questionnaire. The reliability of variables such as awareness, attitude, and acceptance of COVID-19 was determined. The purpose of this study was to examine the public's attitudes toward these vaccines, as well as their acceptance of the COVID-19 vaccine. Participants were of Pakistani citizenship and were 18 years of age or older. A questionnaire was created using Google Forms. The link was then distributed through various all-purpose WhatsApp groups in Pakistan. To ensure that participants met the criteria for participation, questions about age, education and nationality were included in the questionnaire. This is a survey conducted online among the Punjab province of Pakistani population. People living in the country, both men and women, from different educational levels and age groups, were involved in the study. A total of 200 people answered all the survey questions. The p-value <0.05 was considered to indicate a statistically significant association.

Statistical methods of data processing

The data was handled through descriptive analysis with the help of SPSS version 23. All components were tested from descriptive analysis. All results were analyzed through their frequencies and percentages.

Study Tool

The questionnaire was targeted at the general public using online site to study the survey. Simple random sampling technology was adopted to inform the public about the survey. Questions related to knowledge, Attitude, Acceptance, and determinates of COVID-19 Vaccine Acceptance were used to record the response of the Pakistani population to the COVID-19 vaccine.

Results and Discussion

Table 2: Socio-demographic Characteristics of Respondents

Variable	Frequency	Percent
Sex of respondents		
Male	148	74
Female	52	26
Residential Area		
Rural Area	106	53
Urban Area	94	47
Age		
18-25	89	44.5
26-35	84	42
36-45	20	10
> 46	7	3.5
Education		
Illiterate	12	6.0
Matric or below	12	6.0
Intermediate	34	17
Bachelor	142	71
occupation of respondents		
Govt. Employee	31	15.5
Pvt. Employee	43	21.5
Student	56	28
Farmer	19	9.5
House Wife	21	10.5

Pensioner/Retired	6	3
Businessman	25	12.5
Other	5	2.5
Family income (in rupees)		
≤20,000	47	23.5
20,000-60,000	82	41.0
60,000-1,00,000	45	22.5
≥1, 00,000	26	13

The following is a list of people who participated in the Coronavirus Survey: 74% of men and 26% of women. Most of them are from rural areas like 53% in rural areas and 47% in urban areas. These include people of all ages, most of whom are between 18 and 25 years old. Of all the respondents in this study, 44.5% belonged to the 18–25 years' age group, followed by 42% from 26–35 years and 10% from 36–45 years and 3.5 % > 46 years. Opinions on the COVID-19 range from undergraduates to highly educated people. Government, private employees, students, people from all walks of life have been consulted. Their income is from twenty thousand to one lakh.

Table 3: Respondents Knowledge towards COVID-19 Vaccine

Variable	Category	Frequency	Percent
Do you know about the COVID-19 vaccine development.	YES	158	79
	NO	42	21
Do you know about the effectiveness of the COVID- 19.	YES	165	82.5
	NO	35	17.5
Is it dangerous to use an overdose of COVID-19 vaccines.	YES	56	28
	NO	144	72
Does COVID-19 vaccination increase allergic reactions.	YES	50	25
	NO	150	75
Does vaccination increase autoimmune diseases.	YES	147	73.5
	NO	53	26.5
Knowledge toward COVID- 19.	YES	189	94.5
	NO		5.5

Do you know about the COVID-19 vaccine development? 79% of respondents expressed satisfaction with this question as 21% said vaccination was ineffective. Do you know about the effectiveness of different vaccines for corona virus? In which 82.5% of

the respondents were aware of the effectiveness of different vaccines of COVID-19 as 17.5% answer was negative. Overdose of the COVID-19 vaccine is harmful to health. Is it dangerous to use an overdose of COVID-19 vaccines, 28% answered yes as 72% disagreed. 75% said they were satisfied with using the vaccine without fear. 73.5 % Of the respondents explained that vaccination would not increase autoimmune diseases. The survey found that people are more aware of the COVID-19 and 94.5 % of the respondents had good knowledge about the COVID-19 Vaccine.

Table 4: Respondents Attitude towards COVID-19 Vaccine

Variable	Category	Frequency	Percent
Does the newly discovered COVID-19 vaccine is safe	Agree	134	67
	Neutral	39	19.5
	Disagree	27	13.5
Does the COVID-19 vaccine is essential for us	Agree	157	78.5
	Neutral	25	12.5
	Disagree	18	9
COVID-19 vaccine developed in Europe and America are safer than those made in other world countries	Agree	145	72.5
	Neutral	37	18.5
	Disagree	18	9
May you encourage your family/friends/relatives to get vaccinated?	Agree	153	76.5
	Neutral	45	22.5
	Disagree	2	1
It is not possible to reduce the incidence of COVID-19 without vaccination	Agree	166	83
	Neutral	24	12
	Disagree	10	5
The COVID-19 vaccine should be distributed fairly to all of us	Agree	76	38
	Neutral	45	22.5
	Disagree	79	39.5
Respondents comprehensive attitude toward COVID-19 vaccine.	Positive	159	79.5
	Negative	39	19.5

Newly discovered COVID-19 vaccine has mixed public opinion. 67% of people agree that this vaccine is safe. The rest are described as neutral and insecure. When it comes to the need for vaccines, most of these people, 78.5% of the Participants consider it necessary for society and health. European countries and the United States have made great strides in the field of medicine and science. Vaccines developed by these countries are being used mostly in the world. When people were asked whether vaccines made in European countries or in the United States were safer and better than those made in other countries.

72.5% of the Participants think that vaccines made in the United States and European countries are the best to use. Compared to other societies in the world, Pakistan has a lot of negative views about vaccines. And a lot of people are calling it dangerous, when we ask people if you encourage your family, friends and relatives to get vaccinated. So 22.3 % of the Participants advised not to use it completely as it is harmful to health, while 76.7 % of the Participants considered the vaccine to be essential for the health of their loved ones. 83 % of the Participants those surveyed said it was impossible to reduce the number of cases without the COVID-19 vaccine. 12% of people remained neutral and While 5% do not agree that it is impossible to reduce COVID-19 disease without vaccination.

Today the whole world is facing the COVID-19 epidemic. People are seeing a ray of hope in the form of vaccines. But it is also important that vaccines be distributed fairly throughout the world so that people in poor and underprivileged countries can be protected from this contagious disease. But 39.5 % of the Participants of those surveyed disagreed, 38% % of the Participants had agree and while 22.5% said it was neutral. 79.5 % of the Participants had a positive attitude toward the newly developed COVID-19 Vaccine.

Table 5: Source of Information About COVID-19 Vaccine

sources use for Information		
TV	71	35.5
Newspaper	41	20.5
internet	81	40.5
All	7	3.5

The most frequently mentioned was TV 35.5% while 20.5% respondent of the Participants mentioned that they read the newspaper as the most favourite source of information. 40.5 % of the Participants use the internet for information about COVID-19.

Table 6: Factors associated with Intention to Accept COVID-19 Vaccine

Variables	COR (95%)	P-value	AOR (95%)	P-value
Residential Area				
Rural Area	1.00		1.00	
Urban Area	1.03(0.76 – 1.86)	0.17	0.46(0.65 – 1.25)	0.23
Age				
18-25	2.32(1.37 – 3.68)	0.00	2.67(1.06 – 4.87)	0.00
26-35	1.34(0.99 – 2.45)	0.00	1.49(0.88 – 2.37)	0.00
36-45	0.77(0.39 – 1.29)	0.08	0.94 (0.57 – 1.68)	0.07
> 46	1.00		1.00	
Education				
Illiterate	1.00		1.00	
Matric or below	1.65(1.56 – 3.75)	0.01	0.94(0.66 – 1.68)	0.14
Intermediate	4.09(2.58 – 5.69)	0.04	1.17 (0.81 – 2.89)	0.02
Bachelor	6.97(4.71 – 8.98)	0.00	3.87 (2.65 – 5.87)	0.00
Occupation of respondents				
Govt. Employee	1.04 (0.44 – 1.89)	0.00	1.17 (0.78 – 2.67)	0.00
Pvt. Employee	1.67(0.89 – 2.53)	0.07	1.09(1.45 – 4.39)	0.09
Student	2.11(2.11 – 4.78)	0.01	3.89(1.76 – 3.08)	0.03
Farmer	0.72(0.39 – 1.23)	0.05	0.99(2.78 – 3.80)	0.17
House Wife	0.98(0.44 – 1.67)	0.02	0.45(1.78 – 4.52)	0.07
Pensioner/Retired	1.09(1.45 – 2.87)	0.13	2.99(1.66 – 2.91)	0.21
Businessman	1.09(1.80 – 4.06)	0.23	1.23(1.59 – 2.34)	0.64
Other	1.00		1.00	
Family income (in rupees)				

≤20,000	1.00		1.00	
20,000-60,000	1.03 (1.69 – 2.63)	0.04	1.78(2.09 – 4.90)	0.59
60,000-1,00,000	2.78(1.59 – 3.71)	0.00	2.82(0.78 – 0.99)	0.00
≥1, 00,000	1.38(0.55 – 1.09)	0.54	0.90(0.44 – 83)	0.02
Do you know about the COVID-19 vaccine development.				
Yes	2.51 (1.89 – 3.45)	0.00	1.71(1.24 – 3.72)	0.00
NO	1.00		1.00	
Do you know about the effectiveness of the COVID- 19.				
Yes	3.05(1.98 – 4.88)	0.00	3.92(1.78 – 4.09)	0.00
NO	1.00		1.00	
Does the newly discovered COVID-19 vaccine is safe				
Yes	3.90 (2.88 – 4.08)	0.00	2.87(1.31 – 4.97)	0.00
NO	1.00		1.00	
Knowledge toward COVID- 19.				
Yes	3.15(1.18 – 4.08)	0.00	3.42(1.98 – 4.19)	0.00
NO	1.00		1.00	

To determine the factors associated with COVID-19 Vaccine acceptance, bi-variable Multivariable logistic regression analyzes were performed. the age group of 18 – 25 (COR = 2.321; 95% CI: 1.37 – 3.68; *p*-value: 0.00), age group 26-35 (COR = 1.34; 95% CI: 0.99 – 2.45; *p*-value: 0.00), Intermediate (COR = 4.09; 95% CI: 2.58 – 5.69; *p*-value: 0.00), Bachelor (COR = 6.97; 95% CI: 4.71 – 8.98; *p*-value: 0.00), Does the newly discovered COVID-19 vaccine is safe (COR = 3.05; 95% CI: 1.98 – 4.88; *p*-value: 0.00) and Knowledge toward COVID- 19 (COR = 3.15; 95% CI: 1.18 – 4.08; *p*-value 0.00). After adjusting age group, education level, monthly family income, occupation of respondents belonging to urban areas age group of 18 – 25 (AOR = 2.67; 95% CI: 1.06 – 4.87; *p*-value: 0.00). Does the newly discovered COVID-19 vaccine is safe (AOR = 2.87; 95% CI: 1.78 – 4.09; *p*-value 0.00) and having good Knowledge about COVID- 19 (AOR = 3.42; 95% CI: 1.98 – 4.19; *p*-value 0.00). Attending graduation and higher education is also one of the factors associated with accepting the COVID-19 vaccine. Therefore, the adult population who graduated and above were almost three times more likely to receive the

COVID-19 vaccine than their counterparts. The acceptance of the COVID-19 vaccine on the adult population employed by government will be almost three times higher than that of the adult population in the private sector or in their own business. Good information about the COVID-19 vaccine was another important factor in the intent to adopt the COVID-19 vaccine. Adults who had a good knowledge of COVID-19 were almost three times more likely to receive the COVID-19 vaccine than their counterparts.

Strategies to Promote Vaccination against COVID-19

The scale and challenge of a COVID-19 vaccination campaign is unmatched. Program success requires consistent evidence-based strategies for education, communication, and behavioral interventions. Implementation should take into account evidence from research on vaccine education and communication, taking into account the outstanding barriers associated with vaccine development and preparation for the current public health emergency. Likewise, the plan should take into account the potential impact of vaccines and COVID-19 vaccination on routine vaccination-related relationships.

Numerous corona virus disease 2019 (COVID-19) vaccines are currently in human trials. In June 2020, we surveyed 13,426 people in 19 countries to determine possible acceptance rates and factors affecting COVID-19 vaccine acceptance. Of these, 71.5% of participants reported that they were more or less likely to receive the COVID-19 vaccine, and 48.1% reported that they would accept their employer's recommendation to do so. The difference in acceptance rates ranged from about 90% (in China) to less than 55% (in Russia) [14].

The effectiveness of the vaccine campaign to control Corona Virus 2019 disease (COVID-19) does not depend solely on the effectiveness and safety of the vaccine. Acceptance of the vaccine among the general public and health care workers plays a crucial role in the successful control of the epidemic. The purpose of this review was to provide an update on COVID-19 vaccine acceptance rates worldwide. Survey studies on the acceptance rate of COVID-19 vaccine from 33 different countries. Among adults representing the general population, the highest COVID-19 vaccine acceptance rates were found in Ecuador (97.0%), Malaysia (94.3%), Indonesia (93.3%) and China (91.3%). However, Kuwait (23.6%), Jordan (28.4%), Italy (53.7%), Russia (54.9%), Poland (56.3%), USA (56.9%) and France had the lowest COVID-19 vaccine acceptance rates. Found (58.9%). Only eight surveys of healthcare workers (doctors and nurses) found that vaccine acceptance rates ranged from 27.7% in the Democratic Republic of Congo to 78.1% in Israel. Acceptance of COVID-19 vaccination per country (29/47, 62%) in the majority of survey studies among the general population showed a level of 70%. Low rates of COVID-19 vaccine have been reported in the Middle East, Russia, Africa and many European countries [15].

A cross-sectional online survey was conducted between March 25 and April 6, 2020. Participants were asked if they would accept a free vaccine that is 95% or 50% effective. Out of 1,359 respondents, 93.3% (1,268 / 1,359) would like to be vaccinated for 95%

effective vaccine, but this acceptance decreased to 67.0% (911 / 1,359) for 50% effective vaccine [16].

Participants answered questions related to sociopolitical factors, attitudes, and beliefs about COVID-19 infection and vaccination. The proportion of participants most likely to receive the COVID-19 vaccine was 62.1%. Numerous logistical regression analyzes show that vaccine acceptance was low in many sociocultural groups, such as women, adults aged 20-49, and low-income individuals. Numerous psychological factors, particularly the perceived effectiveness of the COVID-19 vaccine, and willingness to protect others by vaccinating themselves, were associated with vaccine acceptance [17].

An online observational cross-sectional study was conducted among students at a French university in January 2021, with questions about the intentions, triggers, and barriers to vaccinating against COVID-19. The facility sample included 3,089 students with an average age of 20.3 (SD = 1.9). When asked about their intention to be vaccinated against COVID-19, 58.0% of students said they would choose to be vaccinated, 17.0% said they would not and 25.0% were unsure. The main motives for vaccine acceptance were "I do not want to transmit COVID-19 to others", the main barriers to vaccine resistance or reluctance [18].

The CoVID-19 epidemic has wreaked havoc around the world, with the United States being hit hardest. A vaccine provides the best hope for a permanent solution to the epidemic. However, to be effective, a vaccine must be accepted and used by a large majority of the population. The purpose of this study was to understand the attitudes and barriers to vaccination with a possible COVID-19 vaccine. Vaccine use and attitudes predicted attitudes toward the COVID-19 vaccine. The severity of COVID-19 was also predicted for the United States. Approximately 68% of all respondents were in favor of being vaccinated for COVID-19, but were concerned about its side effects, efficacy, and length of testing [19].

Vaccine hesitation / resistance was evident in 35% and 31% of these populations, respectively. In Ireland and the UK, vaccine hesitant / resistant respondents differed on a number of socio-demographic and health variables but were similar in a wide range of psychological constructs. In both populations, respondents to the COVID-19 vaccine were less likely to obtain information on infectious diseases from conventional and authoritative sources, and had a similar level of distrust in those sources than vaccine respondents [20].

All participants were positive about the vaccines and agreed that they could be infected with COVID-19. However, only 53% indicated that they would participate in a trial of the COVID-19 vaccine and 23% were unwilling to receive the COVID-19 vaccine immediately upon FDA approval [21].

The American population is still reluctant to use the COVID-19 vaccine. Now that the vaccine is available for priority populations, it is important to convince those who are reluctant to take the vaccine. In addition to public health discussions about vaccines,

misinformation about vaccines is spread through various information channels.47.3% were somewhat hesitant to get vaccinated in the next two months, and 39.9% were more likely to do so [22].

Two-thirds of the 97,779 prisoners were offered the vaccine. Of the vaccine providers, 66.5% (42,952 out of 64,633) accepted at least one dose. The results of an adjusted analysis of the data of the residents who were offered the vaccination showed that acceptance was highest among Hispanics (72.6%) [23].

The COVID-19 epidemic has wreaked havoc around the world, with the United States being hit hardest. A vaccine provides the best hope for a permanent solution to the epidemic. Numerous coronavirus vaccine (COVID-19) vaccines are currently being tested in humans. However, to be effective, a vaccine must be accepted and used by a large majority of the population. The purpose of this study was to investigate the prevalence of COVID-19 vaccines and their predictions in addition to the attitudes of the public towards these vaccines. The study conducted an online survey over the period June-September 2020, collected from 26,852 people aged 19 and over in six continents as part of a 60-nation representative survey to determine possible acceptance rates and COVID-19. Identify factors affecting vaccine acceptance. The results showed that two-thirds of respondents were concerned about at least moderate to large-scale COVID-19 outbreaks. The difference in acceptance rates ranged from about 93% (in Tonga) to less than 43% (in Egypt). Respondents who reported a high level of confidence in information from government sources were more likely to accept the vaccine and consult their employer to do so. There is a need for systematic intervention by public health authorities to reduce the level of hesitation and acceptance of vaccines [24].

Overall, 53.1% (1,257 / 2,368) participants were willing to accept the COVID-19 vaccine once it became available. Male subjects were more likely to accept the COVID-19 vaccine than females (58.3 vs. 50.9%, $p < 0.001$). Overall, 53.1% of study participants expressed a desire to be vaccinated against COVID-19. We found a number of factors affecting the level of acceptance [25].

Yet some studies have examined the attitudes toward COVID-19 vaccination in low-income countries, where large-scale vaccination is just beginning. We analyze the acceptance of the COVID-19 vaccine in 15 survey samples from 10 low- and middle-income countries (LMICs) in Asia, Africa and South America, Russia (a high middle-income country) and the United States. Covered, including a total of 44,260 people. Compared to the United States (mean 64.6%) and Russia (mean 30.4%), we are significantly more willing to take the COVID-19 vaccine in our LMIC samples (mean 80.3%; median 78%; limit 30.1% points). Vaccine approval in LMICs has been expressed primarily with interest in personal protection against COVID-19, while concern about side effects is the most common cause for hesitation. Health workers are the most reliable source of guidance on COVID-19 vaccines [26].

Vaccine reluctance is on the rise, varies from country to country, and conspiracy theories about COVID-19 are linked to global ideology. Results Overall, 31% of participants in

Turkey and 14% in the UK were unsure about vaccinating themselves against COVID-19. In both countries, 3% of participants refused to be vaccinated. In addition, 54% of participants in Turkey and 63% in the UK believed in the natural origin of the novel corona virus. Relying on natural sources has significantly increased the difficulty of accepting the COVID-19 vaccine [27].

Conclusion and Future Scope

We conclude from the results that most of the respondents were male, educated and they knew. As such, health education and liaison with government sources are important ways to eliminate the negative effects of the COVID-19 vaccine. The fastest way to eradicate an epidemic is to make sure vaccines are available to everyone and everywhere. But right now, few countries have widespread access to vaccines, which means the virus will continue to change, cross borders, and destroy everyone in the world. COVID-19 vaccine inequalities will have a profound impact on socioeconomic recovery in low- and middle-income countries. So immediate steps should be taken to ensure vaccine availability in all countries of the world. knowledge about vaccines, the age of healthcare workers, and the workplace are factors that influence attitudes toward the COVID-19 vaccine. As such, we recommend that media outlets and relevant agencies should work to build public confidence by disseminating accurate and consistent information about vaccines.

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