ORIGINAL ARTICLE

Perception of Covid-19 Vaccine and Vaccination

Dr. D. Maria Antonyraj[1] and B. Seenivasan[2*]

[1,2]Ph.D., Associate Professor, PG & Research Department of Commerce, Sacred Heart College, Tirupattur 635601.

ABSTRACT The economy, education, business, tourism, health care and every section of the society is severely affected by Covid-19 virus. It challenged the public health system and affected the people physically and psychologically. The Covid-19 virus resulted in economic crisis of every nation and declared as pandemic by World Health Organisation. Though vaccines are developed rapidly, its acceptance among the people is comparatively low and slow. The present study is conducted to identify the vaccination status, analyse the health issues due to vaccination, source of awareness about vaccine and to measure the perception of people of vaccine. It is a quantitative study conducted primary data collected from 655 respondents in Tamil Nadu. The study found that moderate level of acceptance for vaccines and positive perception of vaccine. Vaccination level is lower among female, and in rural areas. It resulted in health issues in the form of fever and cured in a day by tablets. Though the social media plays a vital role in creating awareness it also creates undue hype and anxiety among the people. Regression analysis of the study revealed the changes in the perception of vaccine reliability and social media impact could result in positive perception among people about vaccine. Creating awareness on Covid-19 and the essentiality of vaccination only could prevent the world from the giant hands of Coronavirus. The reliable information in social media could impact a positive perception among the people on vaccine. Thereby, entire world can overcome the pandemic situation, and save the prestigious life of everyone in this beautiful world.

Keywords: Covid-19, Coronavirus, Vaccine, Vaccination, Perception, Health

Address for correspondence: B. Seenivasan, Ph.D., Associate Professor, PG & Research Department of Commerce, Sacred Heart College, Tirupattur 635601. E-mail: seenivasan@shctpt.edu

INTRODUCTION

The Covid-19 virus pose a stringent challenge to the economy, education, business, tourism, health care, and every section of the society (Lenzen *et al.*, 2020; Betancourt *et al.*, 2020; and Rapanta *et al.*, 2020). It resulted in an economic crisis at global level and immensely challenged the public health (Andersen *et al.*, 2020; and Zhou *et al.*, 2020). It has impact on the physical and psychological health issues of the corona virus affected patients, their families and general public as a whole especially during the period of quarantine (Sidor and Rzymski, 2020; and Prati and Mancini, 2021).

The World Health Organisation (WHO) has declared COVID-19 as pandemic on 11th March, 2020. The Covid-19 and Pandemic has questioned the life and survival of people across the world. Globally, the Covid-19 virus has affected 25, 74, 69, 528 people, leaving 51, 58, 211 deaths as of 23rd November, 2021 as per the reports of WHO. India is one of the severely affected countries of corona virus as it is

ranked second in the world in terms of total covid-19 confirmed cases (34, 526, 480 confirmed cases) and ranked third in the world in terms of total covid-19 death cases (466, 147 deaths) as per the WHO reports dated on 23rd November, 2021.

The medical and scientific communities have conducted various research to protect the people from covid-19 and found the vaccination. The enormous efforts of scientist, funds of various government bodies, and guidelines of WHO, vaccines were found to protect from covid-19 virus. On 31st December, 2020, Pfizer/BionTech covid-19 vaccine was authorized as the first vaccine and listed for WHO EUL (Emergency Use Listing). The Covishield/SII of Serum Institute of India and Astra Zeneca/AZD1222 of AstraZeneca/Pxford was listed for WHO EUL on 16th

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Dr. D. Maria Antonyraj and B. Seenivasan, 2022

February, 2021. The Jenssen/Ad26.COV2.S of Johnson & Johnson, and Sinopharm/mRNA1273 of Beijing Bio-Institute of Biological Products Co. Ltd. were listed in WHO EUL on 12th March 2021 and 7th May 2021 respectively. The clinical trials of these vaccines have reduced Covid-19 infections and serve as a mean to protect human being (Polack *et al.*, 2020; and Baden *et al.*, 2020).

Vaccine is a simple and effective way which trains immune system to produce antibodies to protect against the virus. As on 21st November 2021, 7408, 870, 760 vaccines doses have been administered around the world. India is one of the highly vaccinated country in the world with 1136, 168, 939 doses till 21st November 2021. More than 6.6 core doses were administered in Tamil Nadu to protect from corona virus.

Vaccine could be served by an injection or sprayed in to the nose in order to reduce the risk of disease. Vaccine is a killed or weakened form of a virus which trains human bodies to recognize and fight against the Covid-19 virus while entering in to the body. There are Protein-based vaccines, Viral vector vaccines, and RNA and DNA vaccines. Though people are advised to do frequent hand wash, maintain social distance and wearing mask, the best way to protect from Covid-19 virus is vaccination (Vasileiou *et al.*, 2021). Further, vaccine is an effective tool to fight against the covid-19 pandemic (Voysey *et al.*, 2021) and prevents from serious illness (Xing *et al.*, 2021).

However, the success of vaccination is depending on the perception of people about the vaccine and vaccination process as many have hesitancy about covid-19 vaccines (Kumari *et al.*, 2021. The major threat to vaccine is vaccine hesitancy (Coustasse *et al.*, 2021) which is resulted from past experience, risk aspects of vaccines, level of trust, perceived benefits, and convictions (Dube *et al.*, 2013). The development of vaccines within one year of coronavirus, doubts on durability of effectiveness of vaccines (Baldo *et al.*, 2021), fear of side effects, and spread of suspicious information in social media accumulate hesitancy to get vaccinated (Loomba *et al.*, 2021; and Schiav, 2021). The vaccine refusal of health care workers also affects the public's opinion and decision on vaccination (Gagneux-Brunon *et al.*, 2020). Further, the availability of vaccine and the equitable distribution of vaccines across the borders are the essential factors for the effective vaccination process. Along with the effective health care system, the perception of public on vaccine and vaccination could determine the success of vaccination programme. Hence, it is important to study about the availability of vaccines, reason for declining vaccines, health issues of post vaccination, level of awareness, and the perception about the vaccine and vaccination.

REVIEW OF LITERATURE

The outbreak of coronavirus in china has disturbed every corners of the society and affected the nations economically and politically. Most of the nations have declared lockdown, and insisted on wearing of mask, frequent hand wash and social distancing to control the break out of the virus. Simultaneously, the medical researchers have discovered the vaccines to curb the coronavirus and pandemic. Kwok (2020) and Sanche *et al.* (2020) have estimated that herd immunity could be developed by vaccination of minimum of 55% of the world population. But it is hindered by false and fake information about the safety and effectiveness of vaccine (Burki, 2019) like corona virus is linked with 5G networks and bioweapon, and so on (Megget, 2020; Geldsetzer, 2020; and Pennycook *et al.*, 2020).

The COVID-19 Vaccination is hugely hindered by vaccine hesitancy. In 2015, the WHO defined the term vaccine hesitancy as a 'delay in acceptance or refusal of vaccination despite the availability of vaccine services' (MacDonald, N.E. & SAGE Working Group on Vaccine Hesitancy, 2015). It is the main obstacles to achieve community immunity (Lane, 2018). Globally, the vaccine acceptance was lowest in the Middle East countries due to believes in conspiracy theories (Chadwick *et al.* (2021). The news about blood clots due to AstraZeneca vaccines in Europe also affected the acceptance level of vaccine (Ostergaard *et al.*, 2021).

Fadda (2020) observed that the issue of vaccine hesitancy should be duly addressed, vaccine literacy to be increased, and the spread of misinformation in social media to be curbed in order to minimize the anxieties among the public and to encourage them for vaccination. Dutta *et al.* (2021) has pointed out that the positive social media messaging with adequate training to healthcare workers could enhance covid-19 vaccination programme. But lack of strategies to address the vaccine related rumors is the barriers of vaccination.

Baldolli *et al.* (2020) have found that vaccination is low even though vaccines are secure and effective, and perception of vaccine is positive. Further, their study revealed that 97% of students were perceived vaccines are effective. The vaccine coverage is not associated with the gender and age. However, the fear of public on vaccines, religious reasons, and misinformation about vaccines leads to vaccine refusal Amanda Hayashida *et al.* (2019).

Loomba *et al.* (2021) the acceptance level of Covid-19 vaccine was low during the month of September, 2020 with only 42.5% of the public in USA and 54.1% of the public in UK were definitely ready to accept the vaccine. It was comparatively lower during the month of June, 2020 with 34.2% in USA and 38% in UK (McAndrew and Allington, 2020). The

unemployed people are decided about vaccination than employed groups in UK (Paul *et al.*, 2020).

Lazarus *et al.* (2021) has found that time of pandemic and income level of people have determined the acceptance of Covid-19 vaccines. People with low income have perceived that vaccines are safe. However, the vaccination process is duly assisted by social media in USA and UK along with the increase in trust due to successful vaccination (Chadwick *et al.*, 2021). Trust on Covid-19 and vaccine related information published by Government are high. Few studies have highlighted that males are likely to be vaccinated highly than females, and misinformation in social media has higher impact on vaccination decision among the females and lower income people (Malik *et al.*, 2020; and de Figueiredo, 2020). The healthcare workers in Asia are willing to vaccinate as pandemic is severe, vaccines are safe, and higher socialness mindset (Chew *et al.*, 2021).

Frequent reminders about vaccines and highlighting the benefits of vaccines could build trust among the public on Covid-19 vaccines (Nossier, 2021). The positive information from pediatrician is a major source of acceptance of all kind of vaccines. (Gundogdu, 2020). Lazarus (2021) reported that 71.5% are likely to accept Covid-19 Vaccine and 48.1% are willing to take vaccine when their employer recommends. The acceptance rate of vaccine is high in China (90%) and low in Russia (55%). The acceptance of covid-19 vaccines is high when it is recommended by government authorities. The 52 percent of intention of vaccination is explained by the perceived vaccine safety (Linda Karlsson *et al.*, 2021).

OBJECTIVE OF THE STUDY

1. To identify the vaccination status, and to measure the impact of demographic variables on the vaccination status of people.

2. To analyse the health issues due to vaccination, and to examine the impact of demographic variables on the health issues of vaccination.

3. To identify the important source of awareness about vaccine, and to analyse the impact of demographic variables on the source of awareness.

4. To measure the perception of people of vaccine, and vaccination and to identify the influencing factor on the perception.

RESEARCH METHODOLOGY

The present study, Perception of vaccine and vaccination is conducted with the descriptive research design in order to describe the phenomenon of the vaccination, awareness, health issues and perceptions. The study is predominantly based on the primary data which were collected in August and September 2021 under the convenience sampling method. The structured questionnaire has six demographic variables, five variables on vaccination, four variables about source of awareness, six variables on health issues of vaccination, and eight variables of perception about vaccination framed under Likert scale. The Cronbach's alpha value of 0.766 proves the validity and reliability of variables used for the study (Nunnally, 1978). The analysis of the study is conducted with 655 properly filled up responses which is adequate to conduct factor analysis and various statistical tests (Tabachnick and Fidell, 1996, Cronbach *et al.*, 1972). The findings of the study are derived from various statistical tests conducted in SPSS like Independent Sample t-test, ANOVA, Simple percentage analysis, Factor analysis, and Multiple regression analysis. Further, the study used the secondary data from reputed journals, books, newspaper and magazines.

RESULTS AND DISCUSSION

Demographical Profile

The study consists of 404 female (61.7%) and 251 male (38.3%) respondents. 44.1% of the respondents are aged below 21 and 55.9% of them are aged above 20. 53.4% of the respondents are under graduate and 43.5% are post graduate and above. Nearly two third (64.7%) of them are student and nearly one fourth (23.2%) of them are teachers. Further, 56.3% of the respondents of the study resides in rural areas and remaining lives in urban areas. 73.7% of them are Hindu and 23.5% of the respondents are Christian.

Covid-19 Vaccination Status

The study found that 48% of the total respondents are vaccinated either with one or two doses and remaining are not vaccinated. Out of 313 respondents who were vaccinated, 88.8% of them have taken only one dose and very few (11.2%) have taken both the doses of vaccine. Covishield (81.8%) is highly consumed vaccine than others. Vaccination disturbed the daily routine life of 31.3% of vaccinated people whereas daily routine life of 68.7% of them is not disturbed by vaccination.

The vaccination is higher among male (63.7%) as compared with female (37.9%). Vaccination intake is much higher among middle aged (72.9%) and elders (82.8%), post graduates (56.1%), teachers (65.1%), government employees (77.8%), Christians (54.5%), and people resides in urban areas (49.7%). However, vaccination is lower among youngsters aged below 30, under graduate (58.6%), students (61.6%), Hindus (53.8%), and people in rural areas (53.7%).

Vaccination is comparatively higher in places where availability of vaccine is sufficient (50.7%) and highly sufficient (56.6%)

while compared with the insufficient (41.7%) and highly insufficient (35.5%) availability of vaccine. The chi-square test reveals that the level of vaccination varies based on gender (p = 0.000), age (p = 0.000), educational qualification (p = 0.001), and occupation (p = 0.000) as significance value is less than 0.05.

The main reason for avoiding vaccination is fear of side effects due to vaccine (45.3%). 16.4% of the respondents not believed the quality of vaccine and 9.1% of respondents have doubts regarding duration of immunity from vaccination. Hence, vaccination is affected due to fear of side effects and doubts on vaccine.

Health Issues of Covid-19 Vaccination

Out of 313 vaccinated respondents, 173 (55.3%) of them have undergone health issues due to vaccination. It means, vaccination resulted in health issues among half of the vaccinated people.

Health issues due to vaccination is comparatively higher among female (58.2%), elders (70.8%), and people lives in rural areas (59.1%) than others. Further, 55.9% respondents who consumed Covishield have faced health issues which is slightly higher than Covaxin vaccine (51.8%). Health issues due to covid-19 vaccination is lower among Male (47.5%), middle aged (58%), and Covaxin (48.2%) vaccinated people in urban areas (49.3%). However, the impact of gender (p = 0.313), age (p = 0.071), area (p = 0.138) and type of vaccine (p = 0.571) have no significant impact on health issues as significance value is greater than 0.05.

The main health issue occurred on vaccination is fever (32.9%), tiredness (26%), and Body ache (25.4%). Among 173 affected respondents, 49.1% of health issues have been occurred with in 12 hours of vaccination. Health issues due to vaccination is sustained for less than one day among 43.1% of affected respondents and only very few (7.5%) had health issues for more than 3 days. Medicine (65.9%) provided to vaccinated has served as best treatment for health issues due to vaccination. The health issues due to vaccination is cured without any treatment and medicines for 29.5% of affected respondents.

The health issues have been started within 6 to 12 hours of Covishield vaccination (30.1%) and after one day of Covaxin vaccination (37.9%). It shows that, symptoms of health issues of vaccination could be seen very early among Covishield than Covaxin.

The health issues have cured with in a day of Covaxin (31%) and Covishield (46.2%) vaccination. Further, the analysis shows that health issues due to Covishield has cured very early than Covaxin.

Vaccine Availability and Source of Awareness

The study revealed that the major source of awareness about vaccine and vaccination is social media (46.3%) and followed by Digital and print news (30.4%). However, the reports of Government and WHO (28.2%) is considered as most reliable information source.

Social media is the most reliable source of information about vaccine and vaccination among female (28%), youngsters (27%), under graduates (26.9%), students (30.4%) and people resides in urban areas (26.2%) and non-vaccinated (28.9%) than others. Whereas, male (33.5%), aged above 40 years (40.7%), post graduates (32.6%), teachers (37.5%), and people in rural areas (26%) and vaccinated (32.3%) have considered publications of Government and WHO as most reliable source of information than other sources. The most reliable source of information is significantly differs based on the gender (p = 0.020), age (p = 0.000), occupation (p = 0.000) and vaccination status (p = 0.011) as significant value is less than 0.05.

The present study has found that availability of vaccine is sufficient (64%) whereas, one third (34%) of respondents viewed that vaccine availability is insufficient. Immunity boosting food (36.5%) is viewed as the best solution to protect from corona virus while compared with vaccine (34.8%). Nearly two third of respondents perceived that they can protect from corona without vaccination. Further, people are willing to wear mask and maintain the social distance (84%) even after vaccination.

Vaccine is considered as the best solution to protect from corona by male (45%), aged above 30 (46.8%), post graduates (39.3%), teachers (48%), people in urban areas (38.5%) and vaccinated (51.1%) with two doses (60%). However, female (40.3%), youngsters aged up to 20 years (43.3%), under graduates (41.4%), students (41%), people in rural areas (38.8%) and non-vaccinated (48.5%) have considered immunity boosting food could protect from corona than others. The best solution to protect from corona is significantly varies based on gender, age, education, and vaccination status as significant value is less than 0.05.

Perception of Vaccine and Vaccination

The study reveals that people have awareness about vaccine (87.9%) and they believe the news about the vaccine (87%). However, they felt that social media creates an undue hype about corona and vaccination (76.8%) and felt fear and anxiety due to the information spreading in social media.

Further, 76.1% of respondents opinioned that vaccination is the best solution to protect from corona virus than mask

and social distance. People could be protected from corona virus only by vaccination (68.3%). However, 25% of the respondents believe that vaccination is not the best solution and it may not provide long term protection from corona virus. 79.3% respondents of the study viewed that vaccination should be compelled to all and government should enforce it strictly.

Perception of Vaccine and Selective Demographic Variables

Gender and Perception of Vaccine & Vaccination

The independent sample t test result shows that male (M = 2.04) strongly believes that vaccine is reliable while compared with female (M = 2.03). Further, male (M = 2.03) have stronger faith on social media news on vaccine than female (M = 1.98). However, gender has no impact on people perception about vaccine and vaccination (p = 0.471)

Age and Perception of Vaccine & Vaccination

The Analysis of Variance reveals that age has no significant impact on perception of vaccination (p = 0.142). Respondents aged between 41 to 50 have strong faith on social media news on vaccine (M = 2.15) and they have higher confident on vaccine (M = 2.08) than others.

Education and Perception of Vaccine & Vaccination

Under graduates (M = 2.05) have felt Vaccination is reliable and could provide long term protection whereas, people with school education have lower positive perception on vaccine (M = 1.90). Post graduates (M = 2.01) strongly believes about the social media news on vaccination while compared to others. Perception of vaccine is not vary based on the educational qualification of the respondents (p = 0.324).

Area and Perception of Vaccine & Vaccination

Urban respondents have stronger faith on information spreading in social media (M = 2.07) and have high positive perception on vaccination (M = 2.09) while compared with rural respondents. Further, there is a statistically significant impact of residential area of people on their perception towards vaccination and social media (p<0.05).

Religion and Perception of Vaccine & Vaccination

Religion of respondents have significant impact on the reliability of vaccination (p = 0.001) and overall perception of vaccination (p = 0.020) which is lesser than significance value of 0.05. Respondents following Hinduism have higher positive perception on reliability of vaccination (M = 2.07) and overall perception (M = 2.02) whereas, Christians have higher belief on information spreading in social media (M = 2.01).

Vaccination Status and Perception of Vaccine & Vaccination

The respondents who have vaccinated have strongly perceive that vaccines are reliable (M = 2.14) and strong belief on social media news about vaccination (M = 2.06). The Independent sample t test results shows that vaccination status have significant impact on perception about vaccination (p = 0.000).

Regression Analysis with Perception of Vaccination

In order to identify the important factor that determines the

Table 1: Correlation Analysis and Tolerance Test-Determinants of Perception of Vaccination

Variables	Mean	SD	Correlation	Tolerance	VIF
Perception of Vaccination	2.00	0.530	1.000		
Vaccine Reliability	2.03	0.584	.740**	.865	1.156
Social Media Impact	2.00	0.499	.664**	.865	1.156

Table 2: Regression Analysis-Determinants of Student's Loyalty on Online Class

	SS	Df	MS	F	Sig.
Regression	133.543	2	66.771	862.915	.000b
Residual	50.451	652	.077		
Total	183.994	654			

Note: **$p<0.01$.

Table 3: Results of Regression Analysis-Determinants of Student's Loyalty on Online Class		Coefficients	Std. Error	t	P-value
(Constant)		-.023	.051	-.459	.647
Vaccine Reliability		.521	.020	26.026	.000
Social Media Impact		.482	.023	20.570	.000
Multiple R	.852[a]				
R Square	.726				
Adjusted R Square	.725				
Standard Error	.278				
Durbin Watson	2.04				
Note: **$p<0.01$.					

perception about vaccination, multiple regression analysis is conducted with Vaccine Reliability and Social Media News as Independent variables and Overall perception of vaccination as Dependent variables as tolerance and VIF are in acceptable range of Tol > 0.10 and VIF<10. The correlation analysis shows that there is a statistically significant positive relationship between the independent and dependent variables.

The above ANOVA table shows that Vaccine reliability and Social media impact are significant predictor of Perception of vaccination since there is a statistically significant impact of independent variables on the dependent variable (F = 862.915; p<0.01). The Durbin Watson value of 2.04 denotes that there is no auto correlation. There is a high degree of positive correlation between independent variables and dependent variable as R value of 0.852.

The perception of vaccination could be explained and varied by the changes in the level of perception about vaccine reliability and social media impact as R Square is 0.725. It means, 72.5% of variance in the level of perception of vaccination could be achieved by the changes in the perception about vaccine reliability and social media impact. Vaccine reliability is the main predictor of level of perception of vaccination (Beta = 0.521, P<0.01). It means, 52% improvement in the positive perception of vaccination could be achieved by the hundred percent changes in the perception of vaccine reliability. Hence, 100% vaccination could be achieved in India by improving in the perception about vaccine reliability and spreading reliable news in social media about vaccine and vaccination.

FINDINGS OF THE STUDY

The important findings of the study are as follows:

- 61.7% of the study are female and 38.3% are male. Majority of the respondents are youngsters, graduates, and resides in rural areas.

- Out of 655 respondents, 313 of them are vaccinated (48%) and remaining 52% are not vaccinated. 88.8% of vaccinated respondents (278) consumed only one dose. Vaccination higher among male (63.7%), upper middle aged and elders (76.1%), well educated (48%), Government employees (77.8%), Christians (54.5%) and in urban areas (49.7%). 81.8% of vaccinated people have taken Covishield. Availability of vaccine is sufficient (64%) whereas, one third (34%) of respondents viewed that vaccine availability is insufficient.

- Vaccination is lower among female (37.9%), youngsters (34.6%), students (38.4%), Hindus (53.8%) and in rural areas (46.3%). The level of vaccination is vary based on gender, age, education, and occupation. The main reason for avoiding vaccination is fear of side effects (45.3%).

- 55.3% of people health is affected due to vaccination. Health issues due to vaccination is comparatively higher among female (58.2%), elders (70.8%), and people lives in rural areas (59.1%) than others. Health issues are higher among Covishield injected people (51.8%). Fever (32.9%), tiredness (26%) and body ache (25.4%) are main health issue due to vaccination.

- 49.1% of vaccinated people faced health issues within 12 hours of vaccination. The health issues due to vaccinated

have cured with in one day among 43.1% of vaccinated people. Tablets offered while vaccination serves as best weapon to cure the health issues since 65.9% of affected people have overcame their health issues by those tablets.

- Health issues on vaccination could be seen very early among Covishield (30.1%) than Covaxin (37.9%). Health issues due to Covishield (46.2%) has cured very early within a day while compared to Covaxin (31%).

- Social media (46.3%) is the major source if awareness about vaccine and vaccination followed by digital and print news (30.4%). But most reliable source of information is the reports of Government and WHO (28.2%).

- Female (28%), youngsters (27%), under graduates (26.9%), students (30.4%) and people resides in urban areas (26.2%) have considered social media as reliable source of information about vaccine. Whereas, male (33.5%), aged above 40 years (40.7%), post graduates (32.6%), teachers (37.5%), and people in rural areas (26%) have viewed Govt. and WHO reports as most reliable source of information.

- Immunity boosting food (36.5%) is viewed as best solution to protect from corona virus followed by vaccine (34.8%). Male (45%), aged above 30 (46.8%), post graduates (39.3%), teachers (48%), people in urban areas (38.5%) have considered vaccine is the best solution to protect from Corona. However, female (40.3%), youngsters aged up to 20 years (43.3%), under graduates (41.4%), students (41%), people in rural areas (38.8%) have perceived immunity boosting food as best weapon to protect from corona.

- People are willing to wear mask and maintain social distance (84%) even after vaccination. 87.9% of people have awareness about vaccine and they believe the news about the vaccine. 76.8% of respondents felt social media creates undue hype about corona which resulted in fear and anxiety. 79.3% of respondents have recommended that vaccination should be compelled by the Government.

- Male (M = 2.04), middle aged (M = 2.15), under graduates (M = 2.05), Hindus (M = 2.07), and people in urban areas (M = 2.09) have perceived that vaccine is reliable. Male (M = 2.03), middle aged (M = 2.08), post graduates (M = 2.01), Christians (M = 2.01), and people in urban areas (M = 2.07) have strongly believes and affected on the social media news on vaccination.

- The perception of vaccination is not vary based on the gender, age, and educational qualification as p is greater than 0.05. However, religion, residential status and vaccination status of the respondents have significant impact on the level of perception of vaccination as $p \leq 0.05$.

- The multiple regression analysis revealed that the perception of vaccination could be explained and varied by the changes in the level of perception about vaccine reliability and social media impact as R Square is 0.725. Further, Vaccine reliability is the main predictor of level of perception of vaccination (Beta = 0.521).

RECOMMENDATIONS AND IMPLICATIONS OF THE STUDY

From the detailed analysis and findings of the study, the following suggestion are presented to eradicate coronavirus and to protect people from pandemic. It is recommended that the Government and the Health department should speed up the vaccination process by creating special camp in educational institutions especially in rural areas since vaccination is lower among students, youngsters, and people living in rural areas. Further, they should ensure the availability of vaccine in all the places without any shortage. Awareness on vaccination should be provided to people and people in rural areas along with the special vaccination drive.

People should share the true and reliable information about coronavirus, vaccine and vaccination in social media as it is considered as the major source of information. The social media news on corona virus and vaccine could be censored or monitored as it creates fear and anxiety among the general public.

The fear of people about side effects and health issues due to vaccination should be eradicated. Further, the awareness and information should be spread among the people that the health issues on vaccination could be cured very easily and early through the tablets provided at the time of vaccination. Academic and medical researches should be conducted to analyse the reasons for higher health issues due to vaccination among female, elders, rural areas and Covishield injection. Further, duration of health issues on different type of vaccine should be analysed clinically.

Clinical studies could be conducted on impact of immunity boosting foods like pepper, turmeric powder, and etc., on corona treatment since it is considered as the best solution to protect from coronavirus. The Government and medical industry should provide clinical proof that vaccines are most reliable to cure corona virus especially among female, youngsters, and people in rural areas.

The study on perception of vaccine and vaccination is one of the pioneers in the field of knowledge and research. The present study is conducted in depth to measure the awareness of vaccination, vaccination status, health issues of vaccination, and perception of vaccination. Based on the findings and suggestions of the study, effective strategy could be framed

to create awareness of vaccination among the needy people. The results of the study could provide insight to health departments to identify the gap in vaccination process in terms of demographic and geographic aspects. In addition to that, they could plan the special vaccination drives. The study highlights the areas of researches to be conducted to identify the reasons for avoidance of vaccination by specific group of people, reasons for higher health issues due to vaccination among specific group of people, and reasons for lower positive perception of vaccinations.

LIMITATIONS AND SCOPE OF FURTHER RESEARCH

The present study is made to measure the perception of people on vaccine and vaccination only with 655 respondents. The major limitation of the study is majority of the respondents are students and teachers. The study does not have due representation to all the group of people in terms of their demographical aspects. It does not cover the patients affected by corona virus, third gender and people in hill areas. The present study is focused to measure the behavioral perspective of people on vaccination and it does not measure in terms of clinical parameters. Further, the study is conducted only in google forms in English and it does not have sufficient responses from doctors and medical staff.

Hence, it is recommended to the researcher to conduct the academic researches with larger sample at district, state or national level with due representation from all the segment of people as well as patients of coronavirus. A clinical study may be conducted to measure the effectiveness of immunity boosting natural products and foods on coronavirus. A comparative study could be conducted clinically about the effectiveness of vaccine and immunity boosting foods. Further, academic researches could be conducted about the level of motivation and satisfaction of vaccine among the people.

CONCLUSION

The study on perception of vaccine and vaccination revealed that majority of people are not vaccinated especially by female, youngsters, students and people of rural areas due to fear of side effects due to vaccine. Majority of the vaccinated people have faced health issues due to vaccination in the form of fever and got cured within a day through the tablets provided while vaccination.

Though people have awareness about vaccine and vaccination, they rely on social media news and had fear and anxiety on news spreading in social media. The reports of government and World Health Organization serves as most reliable source information among male, post graduates and teachers. The study also found that vaccines to be made available at all the places. As per the perception of people, immunity boosting foods serve as best solution to protect from coronavirus followed by vaccine. Whereas, male, middle aged people, teachers, and people in urban areas perceives vaccine is the best weapon to protect from corona.

The study found that vaccination status of people varies based on the gender, age, education and occupation. Similarly, the perception of vaccination varies on the religion, residential area, and vaccination status of the people. Further, reliability of vaccine and impact of social media determines the level of positive perception of vaccination. Hence, the study suggested to create awareness about the benefits of vaccination, to conduct special vaccination drives in educational institutions, to boost the availability of vaccine, to ensure that the information spreads in social media are reliable and to assure the effectiveness of vaccine. The awareness about vaccination, reliable information in social media, and positive perception of vaccine and vaccination could curb the spread of coronavirus. It also could avail to overcome the pandemic situation, and to save the prestigious life of everyone in this beautiful world.

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Dr. D. Maria Antonyraj and B. Seenivasan, 2022

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APPENDIX

Table 1: Demographic Details of the Respondents (N = 655)			
Demographic Factors	**Attributes**	**Frequency**	**Percent**
Gender	Female	404	61.7
	Male	251	38.3
Age	Up to 20	289	44.1
	21-30	201	30.7
	31-40	77	11.8
	41-50	59	9.0
	Above 50	29	4.4
Educational Qualification	School Level	20	3.1
	UG	350	53.4
	PG and Above	285	43.5
Occupation	Student	424	64.7
	Teacher	152	23.2
	Home Maker	12	1.8
	Business and Profession	16	2.4
	Non - Govt. Employee	33	5.0
	Government Employee	18	2.7
Residential Area	Urban	286	43.7
	Rural	369	56.3
Religion	Hindu	483	73.7
	Christian	154	23.5
	Muslim	18	2.7

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)
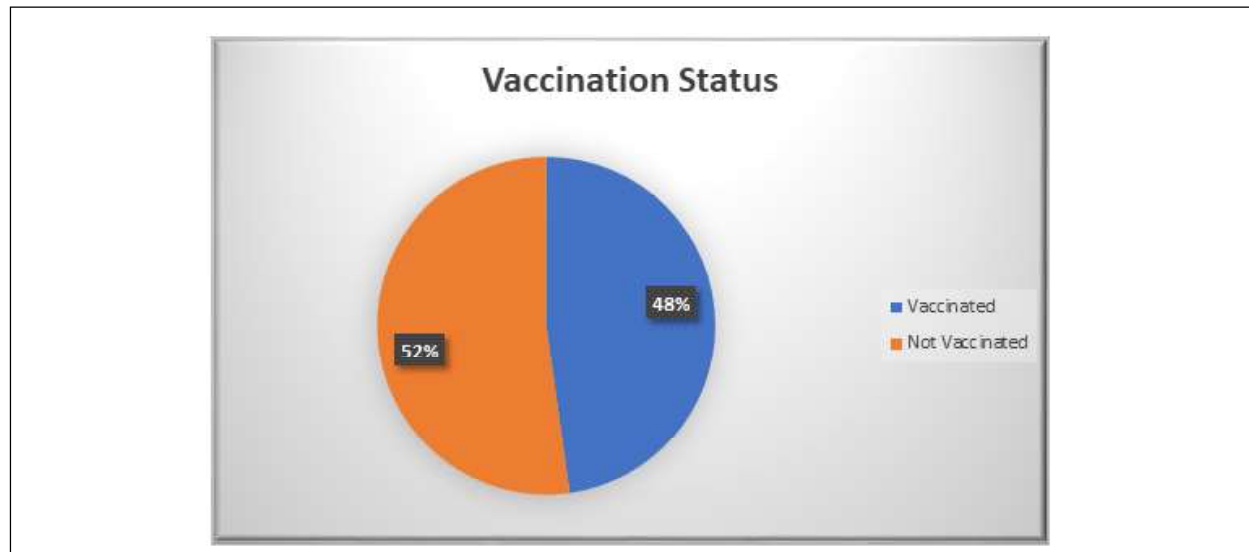
Table 2: Results of Chi-Square Test: Selective Demographic Variables and Vaccination Status				
Demographic Variables		**Vaccination Status**		**Asymp. Sig. (2-sided)**
		Vaccinated	**Not Vaccinated**	
Gender	Female	153 (37.9)	251 (62.1)	0.000**
	Male	160 (63.7)	91 (36.3)	
Age	Up to 20	100 (34.6)	189 (65.4)	0.000**
	21-30	96 (47.8)	105 (52.5)	
	31-40	50 (64.9)	27 (35.1)	
	41-50	43 (72.9)	16 (27.1)	
	Above 50	24 (82.8)	5 (17.2)	
Educational Qualification	School Level	8 (40)	12 (60)	0.001**
	UG	145 (41.4)	205 (58.6)	
	PG & Above	160 (56.1)	125 (43.9)	
Occupation	Student	163 (38.4)	261 (61.6)	0.000**
	Teacher	99 (65.1)	53 (34.9)	
	Home Maker	6 (50)	6 (50)	
	Business and Profession	10 (62.5)	6 (37.5)	
	Non-Govt. Employee	21 (63.6)	12 (36.4)	
	Government Employee	14 (77.8)	4 (22.2)	
Residential Area	Urban	142 (49.7)	144 (50.3)	0.400
	Rural	171 (46.3)	198 (53.7)	
Religion	Hindu	223 (46.2)	260 (53.8)	0.089
	Christian	84 (54.5)	70 (45.5)	
	Muslim	6 (33.3)	12 (66.7)	
Availability of Vaccine	Highly Insufficient	11 (35.5)	20 (64.5)	0.053
	Insufficient	80 (41.7)	112 (58.3)	
	Sufficient	192 (50.7)	187 (49.3)	
	Highly Sufficient	30 (56.6)	23 (43.4)	

Note: **p≤0.01; *p≤0.05.

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)

Table 3: Most Important Reason for Declining Vaccination (N = 342)		
Reason for Declining Vaccination	**Frequency**	**Percent**
Doubt regarding duration of immunity from vaccination	31	9.1
Fear of side effects and reaction	155	45.3
Did not believe in the quality of the vaccine	56	16.4
Fear of long-term complications	25	7.3
Fear of impotency	16	4.7
Non-Availability of Vaccine	25	7.3
Lactating Women	4	1.2
Affected by Corona	8	2.3
Corona will not affect me	8	2.3
Health Issues	6	1.8
Family Situation	8	2.3
Total	342	100.0

Table 4: Vaccination Status with Reason (N = 313)			
	Attributes	**Frequency**	**Percent**
Number of Doses	One	278	88.8
	Two	35	11.2
Type of Vaccine Injected	Covaxin	56	17.9
	Covishield	256	81.8
	Sputinik V	1	.3
Disturbance of Daily Routine Work Due to Vaccination	Yes	98	31.3
	No	215	68.7
Faced Issues After Vaccination	Yes	173	55.3
	No	140	44.7

Table 5: Results of Chi-Square Test: Selective Demographic Variables and Health Issues due to Vaccination (N = 173)

Demographic Variables		**Health Issues due to Vaccination**		**Asymp. Sig. (2-sided)**
		Affected	Not Affected	
Gender	Female	89 (58.2)	64 (41.8)	0.313
	Male	84 (52.5)	76 (47.5)	
Age	Up to 20	61 (61)	39 (39)	0.071
	21-30	54 (56.3)	42 (43.8)	
	31-40	21 (42)	29 (58)	
	41-50	20 (46.5)	23 (53.5)	
	Above 50	17 (70.8)	7 (29.2)	
Residential Area	Urban	72 (50.7)	70 (49.3)	0.138
	Rural	101 (59.1)	70 (40.9)	
Type of Vaccine	Covaxin	29 (51.8)	27 (48.2)	0.571
	Covishield	143 (55.9)	113 (44.1)	
	Sputinik V	1 (100)	0 (0)	

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)

Table 6: Issues of Vaccination and Treatment (N = 173)			
	Attributes	**Frequency**	**Percent**
Main Issue faced After Vaccination	Tiredness	45	26.0
	Body Ache	44	25.4
	Fever	57	32.9
	Local Pain at Injected Site	19	11.0
	Joint Pain	5	2.9
	Vomiting	1	0.6
	Giddiness	2	1.2
Time of Occurrence of Issue After Vaccination	Within One Hour	15	8.7
	1-6 Hours	22	12.7
	6-12 Hours	48	27.7
	12-24 Hours	40	23.1
	After One day	48	27.7
Duration of Post Vaccination Issues	Up to 12 Hours	40	23.1
	12-24 Hours	35	20.2
	1-2 Days	47	27.2
	2-3 Days	38	22.0
	More than 3 Days	13	7.5
Type of Treatment for Post Vaccination Issues	Taken Tablets	114	65.9
	Hospitalized	8	4.6
	Not Taken Any Treatment	51	29.5

Table 7: Chi-Square Test: Type of Vaccine and Time of Occurrence of Health Issues (N = 173)							
Vaccine Type	**Time of Occurrence of Issue After Vaccination**					**Total**	**Asymp. Sig. (2-sided)**
	Within One Hour	1-6 Hours	6-12 Hours	12-24 Hours	After One day		
Covaxin	5 (17.2)	1 (3.4)	5 (17.2)	7 (24.1)	11 (37.9)	29	0.067
Covishield	10 (7)	20 (14)	43 (30.1)	33 (23.1)	37 (25.9)	143	
Sputinik V	0	1 (100)	0	0	0	1	
Total	15 (8.7)	22 (12.7)	48 (27.7)	40 (23.1)	48 (27.7)	173	

Table 8: Chi-Square Test: Type of Vaccine and Duration of Post Vaccination Health Issues (N = 173)							
Vaccine Type	**Duration of Post Vaccination Issues**					**Total**	**Asymp. Sig. (2-sided)**
	Up to 12 Hours	12-24 Hours	1-2 Days	2-3 Days	More than 3 Days		
Covaxin	4 (13.8)	5 (17.2)	9 (31)	5 (32)	6 (20.7)	29	0.094
Covishield	36 (25.2)	30 (21)	38 (26.6)	32 (22.4)	7 (4.9)	143	
Sputinik V	0	0	0	1	0	1	
Total	40 (23.1)	35 (20.2)	47 (27.2)	38 (22)	13 (7.5)	173	

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)

Table 9: Perception about Vaccine Availability and Source of Awareness (N = 655)			
	Attributes	**Frequency**	**Percent**
Availability of Vaccine in the Respondents' Locality	Highly Insufficient	31	4.7
	Insufficient	192	29.3
	Sufficient	379	57.9
	Highly Sufficient	53	8.1
Major Source of Awareness about Vaccine and Vaccination	Social Media	303	46.3
	Family and Friends	126	19.2
	TV and Newspaper	199	30.4
	Colleagues	27	4.2
Most Reliable Source of Information	TV and Print Media	136	20.8
	Social Media	159	24.3
	Government and WHO	185	28.2
	Health Care Providers	90	13.7
	Family and Friends	85	13.0
Best Solution to Protect from Corona Virus	Vaccine	228	34.8
	Medical Treatment	9	1.4
	Immunity Boosting Food	239	36.5
	Mask	98	15.0
	Social Distance	81	12.4
Willingness to Follow Social Distance and Wearing Mask After Vaccination	Yes	550	84.0
	No	17	2.6
	Maybe	88	13.4

Table 10: Results of Chi-Square Test: Selective Demographic Variables and Reliable Source of Information About Vaccine (N = 655)

Demographic variables		Most Reliable Source of Information				
		TV and Print Media	**Social Media**	**Government and WHO**	**Health Care Providers**	**Family and Friends**
Gender	Female	87 (21.5)	113 (28)	101 (25)	56 (13.9)	47 (11.6)
	Male	49 (19.5)	46 (18.3)	84 (33.5)	34 (13.5)	38 (15.1)
Age	Up to 20	73 (25.3)	78 (27)	64 (22.1)	32 (11.1)	42 (14.5)
	21-30	29 (14.4)	60 (29.9)	62 (30.8)	23 (11.4)	27 (13.4)
	31-40	16 (20.8)	10 (13)	25 (32.5)	18 (23.4)	8 (10.4)
	41-50	13 (22)	9 (15.3)	24 (40.7)	8 (13.6)	5 (8.5)
	Above 50	5 (17.2)	2 (6.9)	10 (34.5)	9 (31)	3 (10.3)
Educational Qualification	School	6 (30)	4 (20)	4 (20)	2 (10)	4 (20)
	UG	83 (23.7)	94 (26.9)	88 (25.1)	41 (11.7)	44 (12.6)
	PG & Above	47 (16.5)	61 (21.4)	93 (32.6)	47 (16.5)	37 (13)

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)

Table 11: Results of Chi-Square Test: Selective Demographic Variables and Best Solution to Protect from Corona (N = 655)

Demographic Variables		Best Solution to Protect from Corona Virus					Asymp. Sig. (2-sided)
		Vaccine	Medical Treatment	Immunity Boosting Food	Mask	Social Distance	
Gender	Female	115 (28.5)	4 (1)	163 (40.3)	61 (15.1)	61 (15.1)	0.000
	Male	113 (45)	5 (2)	76 (30.3)	37 (14.7)	20 (8)	
Age	Up to 20	86 (29.8)	4 (1.4)	125 (43.3)	44 (15.2)	30 (10.4)	0.000
	21-30	59 (29.4)	1 (5)	75 (37.3)	31 (15.4)	35 (17.4)	
	31-40	36 (46.8)	2 (2.6)	22 (28.6)	9 (11.7)	8 (10.4)	
	41-50	33 (55.9)	2 (3.4)	8 (13.6)	9 (15.3)	7 (11.9)	
	Above 50	14 (48.3)	0 (0)	9 (31)	5 (17.2)	1 (3.4)	
Educational Qualification	School	7 (35)	1 (5)	3 (15)	6 (30)	3 (15)	0.016
	UG	109 (31.1)	6 (1.7)	145 (41.4)	54 (15.4)	36 (10.3)	
	PG & Above	112 (39.3)	2 (0.7)	91 (31.9)	38 (13.3)	42 (14.7)	
Occupation	Student	125 (29.5)	5 (1.2)	174 (41)	63 (14.9)	57 (13.4)	0.054
	Teacher	73 (48)	2 (1.3)	44 (28.9)	19 (12.5)	14 (9.2)	
	Others	30 (38)	2 (2.53)	21 (26.58)	16 (20.25)	10 (12.66)	
Residential Area	Urban	110 (38.5)	5 (1.7)	96 (33.6)	44 (15.4)	31 (10.8)	0.323
	Rural	118 (32)	4 (1.1)	143 (38.8)	54 (14.6)	50 (13.6)	
Vaccinated Status	Vaccinated	160 (51.1)	4 (1.3)	73 (23.3)	43 (13.7)	33 (10.5)	0.000
	Not Vaccinated	68 (19.9)	5 (1.5)	166 (48.5)	55 (16.1)	48 (14)	
Doses had	One	139 (50)	4 (1.4)	69 (24.8)	35 (12.6)	31 (11.2)	0.149
	Two	21 (60)	0 (0)	4 (11.4)	8 (22.9)	2 (5.7)	

Table 12: Perception of Vaccine and Vaccination (N = 655)

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean	Rank
Complete Awareness about Vaccine	7 (1.1)	72 (11)	359 (54.8)	217 (33.1)	3.20	1
Believe the news about Vaccine and Vaccination	10 (1.5)	75 (11.5)	393 (60)	177 (27)	3.13	2
Social Media Creates Undue Hype about Corona and Vaccination	15 (2.3)	137 (20.9)	366 (55.9)	137 (20.9)	2.95	6
Social Media news on Vaccination deaths creates Fear and Anxiety	15 (2.3)	118 (18)	293 (44.7)	229 (35)	3.12	3
Vaccination is Best Solution than Mask and Social Distancing	17 (2.6)	138 (21.1)	283 (43.2)	217 (33.1)	3.07	5
Vaccination Provides Long Term Protection	21 (3.2)	149 (22.7)	343 (52.4)	142 (21.7)	2.93	7
Vaccination is the Only Solution to Stop Covid-19 Pandemic	27 (4.1)	180 (27.5)	272 (41.5)	176 (26.9)	2.91	8
Vaccination should be Compelled by the Government	23 (3.5)	113 (17.3)	288 (44)	231 (35.3)	3.11	4

Dr. D. Maria Antonyraj and B. Seenivasan, 2022

APPENDIX (CONT.)

Table 13: Results from a Factor Analysis of the Perception of Vaccine and Vaccination

Factor	Items	Loading	Initial Eigenvalues	% of Variance	Cronbach Alpha
F1 – Vaccine Reliability	Vaccination is Best Solution than Mask and Social Distancing	0.717	3.188	39.854	0.789
	Vaccination Provides Long Term Protection	0.802			
	Vaccination is the Only Solution to Stop Covid-19 Pandemic	0.821			
	Vaccination should be compelled by the Government	0.685			
F2 – Social Media Impact	Complete Awareness about Vaccine	0.484	1.125	14.065	0.548
	Believe the news about Vaccine and Vaccination	0.531			
	Social Media Creates Undue Hype about Corona and Vaccination	0.693			
	Social Media news on Vaccination deaths creates Fear and Anxiety	0.693			

Note: N = 655. Loading greater than 0.4 are suppressed; Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation Converged in 3 Iterations. KMO at 0.826; Bartlett's Test of Sphericity (1249.764, DF 28, Sig. 000).

Table 14: Results of Independent Sample t Test-Gender and Perception of Vaccine and Vaccination

	Female		Male		t	Sig. (2-tailed)
	M	*SD*	*M*	*SD*		
F1	2.03	0.569	2.04	0.609	-.184	.854
F2	1.98	0.517	2.03	.468	-1.189	.235
Overall	1.99	.536	2.02	.521	-.722	.471