Indian Journal of Forensic Medicine and Toxicology
Volume 16 No. 4, October-December 2022

COVID -19 Vaccine Awareness among Dental Students: A Cross Sectional Study

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How to cite this article: K.Sheela, Ashika. A, Elakiya. S et. al. COVID -19 Vaccine Awareness among Dental Students: A Cross Sectional Study. Indian Journal of Forensic Medicine and Toxicology 2022;16(4).

Abstract

Background: Dental professionals are frequently exposed to environments with high levels of occupational hazards by performing duties in close contact with the oral cavity prone for COVID 19 disease transmission. Further, as healthcare providers, dentists are assigned with providing health care support and encouraging their patients, and community in various activities to prevent the spread of diseases including vaccinations especially during this COVID19 pandemic.

Aim: The present study was aimed to assess the awareness of an individual towards COVID19 vaccination.

Methodology: A cross sectional online-survey was conducted using self-administered questionnaires, through Google forms among dental students of Thai Moogambigai dental college and Hospital, Chennai, Tamilnadu, India.

Results: Majority of the dental students were aware of the COVID19 Vaccines currently available. Among which 78.85% considered COVID-19 vaccines should be made mandatory for all the health care professionals. 75% felt vaccination is not recommended immediately following covid-19 infection or recovered recently. About half of the participants were unaware of vaccination protocols for patients with diabetes, immuno-compromised disease or any bleeding disorder.

Conclusion: Most of the dental students were aware of vaccines available for the COVID 19 infection however show very low vaccination rate. Thus immediate implementation of epidemiology education associated with infectious diseases and vaccination developments should be incorporated by organizing awareness programs.

Keywords: Awareness, Children, COVID-19 Vaccines, mRNA Vaccine, Pregnancy, Systemic disease

Introduction

COVID 19 disease caused by Severe Acute Respiratory Syndrome-CoV2 (SARS-CoV2) corona virus is a global pandemic that created a panic situation across the world [1]. Vaccine hesitancy associated with low awareness has been recognized as a serious

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public health threat that requires comprehensive investigation among various population groups particularly among the health care professionals to fully understand its prevalence and associated factors [2]. Several evidence based investigations suggested that among various health care professionals, dentists are frequently exposed to environments with high levels of occupational hazards by performing clinical cases in close contact with oro-pharyngeal region accompanied with aerosol and droplets generating procedures conferring additional risks of viral exposure and disease transmission[3,4].

Dental students represents a particular subcategory of the healthcare professional. Dental student's population play an important role in influencing their patients' and peer groups on health-related awareness attitudes and behaviors to improve the quality of life[5]. Research on dental professionals and dental students' acceptance of vaccinations has indicated partial agreement with recommended vaccinations across several countries owing to several factors such as lack of awareness, fear of complications associated with vaccine, hesitation on new vaccines due to lack of safety data, unsure vaccination protocols for systemically compromised patients and its efficacy on new variant strains[6]. Thus, it is important to ensure early vaccination and achieve high COVID-19 vaccination rates among this group[7].

Further, as healthcare providers, they are assigned with providing health care support and encouraging their patients, community, and profession, in various activities to prevent the spread of diseases including vaccinations. Thus the present study was aimed to assess the awareness of an individual towards COVID19 vaccinations amongst dental students.

Discussion

Materials and Methods

The present cross-sectional questionnaire survey was conducted among dental students of Thai Moogambigai Dental College and Hospital, Chennai, Tamilnadu, India, to assess the awareness of an individual towards COVID19 vaccinations. All the required information was collected through published scientific articles pertaining to the study and self-administered structured questionnaires, comprising of 20 questions in English language was prepared and evaluated. The questionnaire had both combination of few selected response to the certain questions and also close ended questions (Yes / No) as shown in Table 1. Since this study was conducted during COVID-19 pandemic lockdown period, online Google forms were generated and distributed through social media platforms.

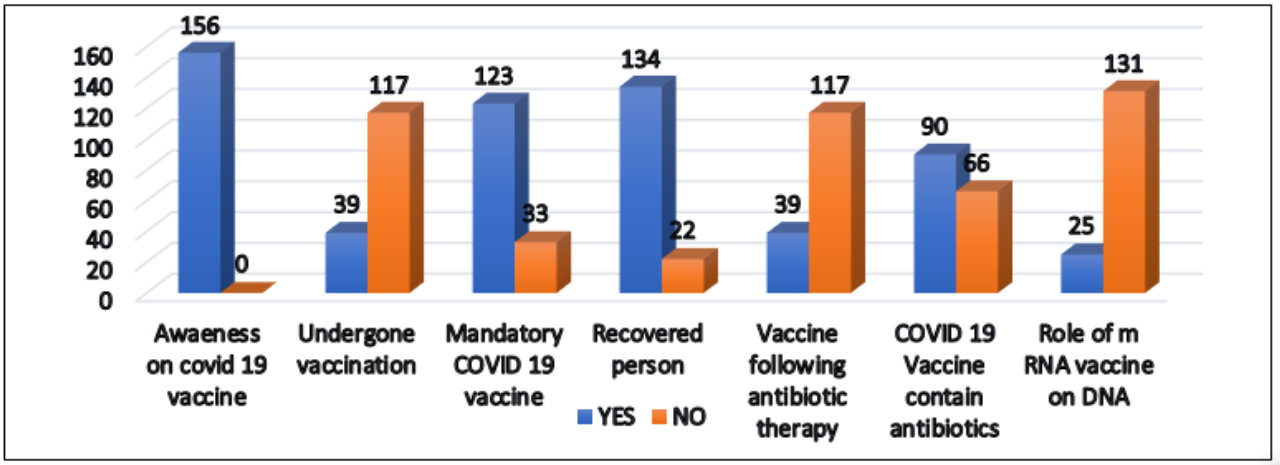
The study included dental students of Thai Moogambigai Dental College and Hospital, age greater than or equal to 18years, individuals active in social media platforms such as Facebook, Whatsapp, LinkedIn and those who can read and understand English with voluntary interest to participate in the survey. Dental professionals, practitioners, dental students of other colleges/universities were excluded from the study. The protocol was submitted to the ethical committee before the start of the study and the approval was obtained from the Institutional Review Board. All the participants were informed about the purpose of the study and assured that their participation was purely voluntary.

Non-probability random sampling technique was employed that yielded information from 156 dental students were taken into this observational study having a cross-sectional design. Responses recorded among the selected population group were evaluated for statistical analysis by SPSS software Version 19.0. On statistical evaluation it was observed all 156 samples were valid for the study with Cronbach's alpha reliability score being **0.898** (significant score).

Results

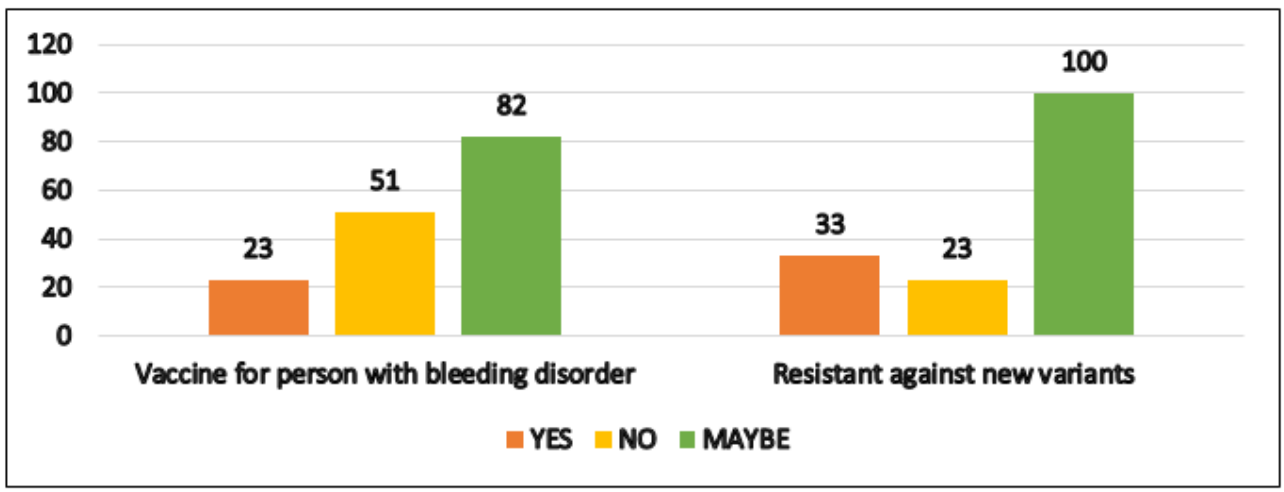
The data was analysed using Statistical Package for Social Science(SPSS) software. Descriptive analysis with frequency, percentage, mean and standard deviation was computed. Pearson Chi Square Test and Fisher's Exact Test was used to asses the level of significance at $p<0.05$. In the present study ,the responses were recorded and the statistical data obtained is represented in table 1.The results obtained were statistically significant as shown by Chi Square Test which is represented in Table-1. It was observed that all the participants (100%) were aware of COVID-19 vaccines though only 25%(39)

have vaccinated during the time of the study. 78.85%(123) considered COVID-19 vaccines should be made compulsory for all the health care professionals including dentists. It was observed that 85.90%(134) felt vaccinations should be taken by COVID recovered person apart from non-infected group however 75%(117) considered vaccination is not necessary immediately for a person who recently had covid-19 infection and treated with antibiotic based therapy. 85.90%(90) participants think that COVID19 vaccine contains antibiotics while 42.31%(66) responded in contrast that COVID Vaccines does not contain antibiotic, thus showing statistically insignificant value(0.05466)as shown in table-1. About 16.03%(25) participants revealed that COVID19 vaccine can alter the DNA of a person while 83.97%(131) disagreed with role of mRNA vaccine in modifying the DNA of a person. (as represented in graph -1)



Graph 1: Awareness on COVID 19 vaccine among various conditions

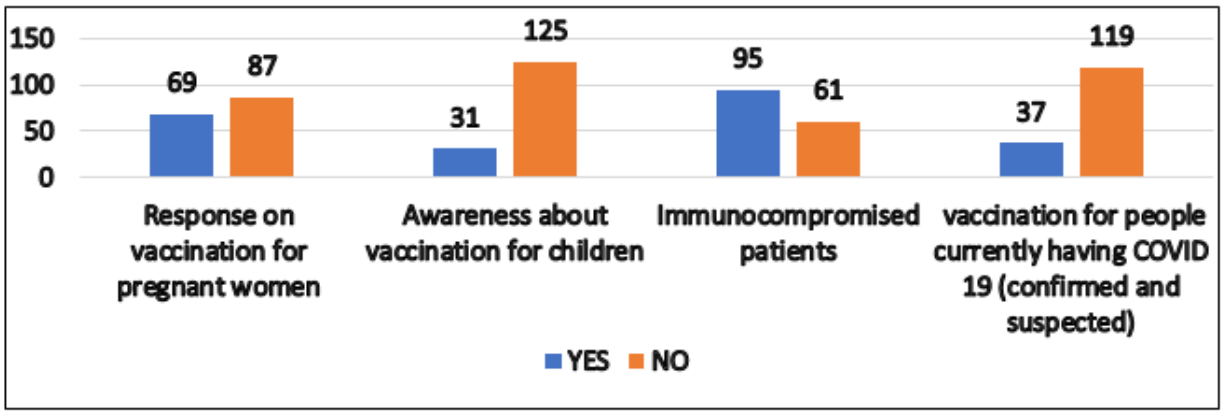
About 52.56%(82) of the participants were unaware of vaccination protocols for patients with bleeding disorder. 21.15%(33) agrees that vaccines will be effective against the new variant while 14.74%(23) disagrees with the same context and 64.10%(100) are not sure about the resistance of the new variant to covid 19 vaccination. (as shown in graph- 2)



Graph 2: Response among dental students on covid 19 vaccination in bleeding disorder patients/resistant against new variant

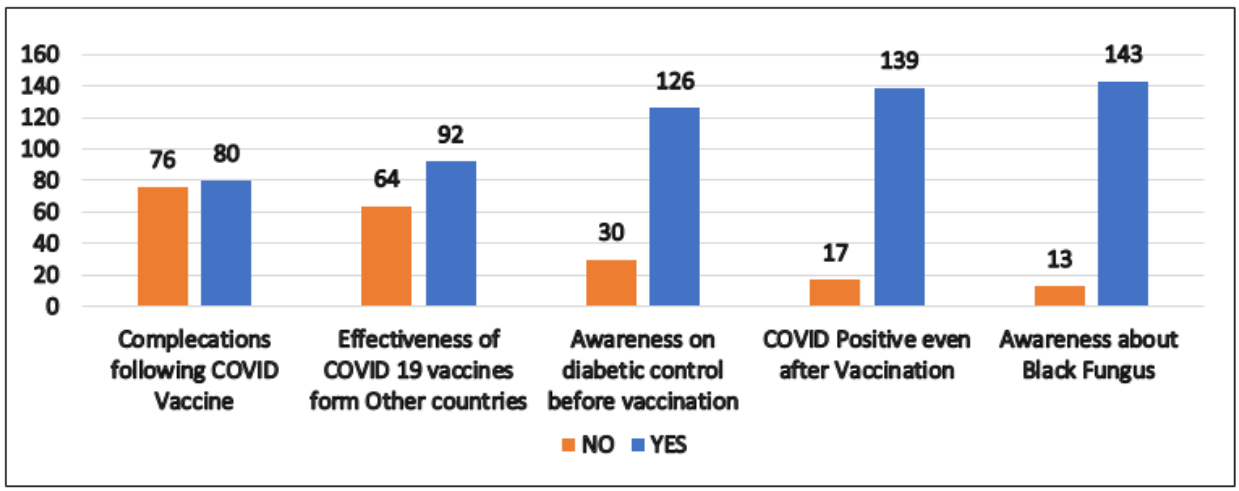
55.77%(87) recommended avoidance of COVID19 vaccines in pregnancy, thus showing statistically insignificant value of 0.14954 as shown in table-1. 80.13%(125) suggested that children

below 10 years of age should not get vaccinated thus considered as an absolute contraindication among these groups. About 60.90%(95) responded that immuno-compromised patients can get vaccinated. 23.72%(37) participants think that COVID19 vaccine should be given for person currently having covid-19 (confirmed or suspected) while 76.28%(119) disagreed with COVID19 vaccination for confirmed/suspected cases.(as depicted in graph- 3).



Graph 3: Awareness on COVID 19 Vaccine in various medical conditions

Majority of the respondents (80) strongly believe in the complications (blood clots) associated with these vaccines, revealing statistically insignificant value (0.74877) as shown in table 1. 41.03%(64) were unsure about the activities of these vaccines invented from one country will be effective for all countries. 80.77%(126) considering blood sugar control is mandatory before vaccination in diabetic patients. 89.10%(139) participants think COVID test maybe positive even after vaccination. 91.67%(143) participants were aware of black fungus among COVID recovered patients while only 8.33%(13) were unaware of black fungus attack among COVID recovered patients. (as shown in the graph 4).



Graph 4: Awareness on effectiveness and complications of COVID 19 vaccine

55.77% received information about COVID-19 vaccine through news (media) followed by google / internet (31.41%) and articles (12.18%). (as shown in Figure 1)

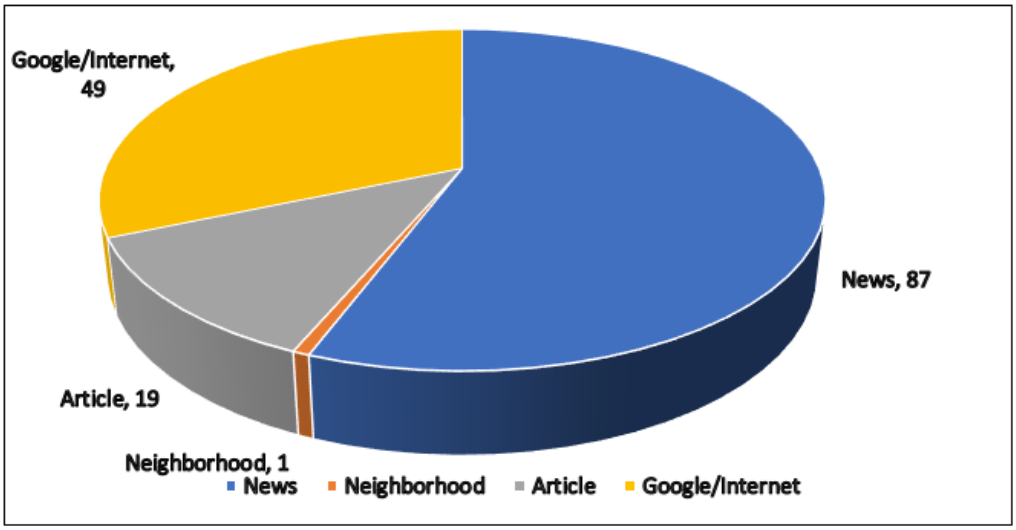


Figure 1: Source of information

Around 67 out of 156 (42.95%) prefers 1 month waiting period for COVID vaccination after undergoing non-COVID vaccines and 46 participants (29.49%) opted for 2 weeks time interval , whereas 34 participants (21.79%) selected 3 weeks duration for COVID Vaccination after taking non covid vaccine. The least being 9 participants ((5.77%) preferred 1 week time interval respectively.(as shown in the Figure 2)

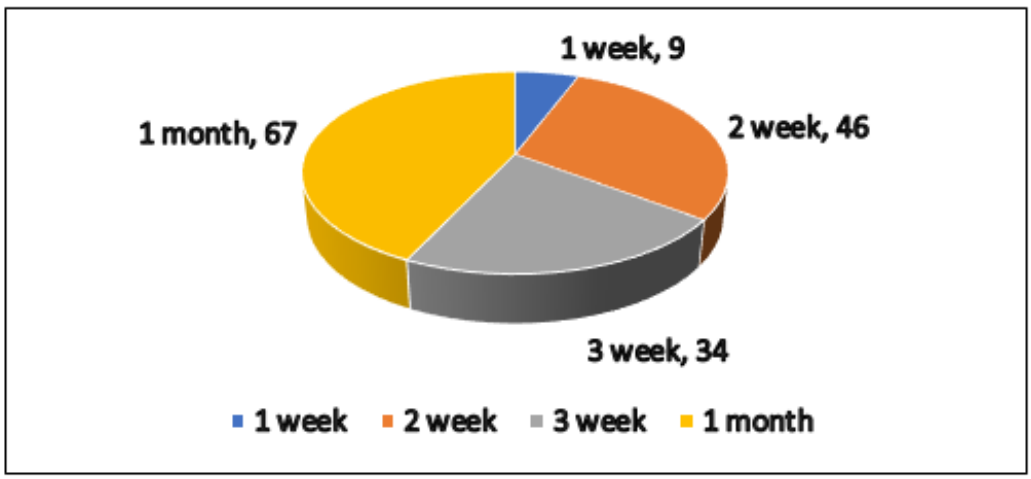


Figure 2: Vaccination period following Non COVID vaccine

Table 1: Table showing the Questionnaire Responses

Questions	Responses	N	%	Chi^2	p value
Are you aware of covid-19 vaccine?	yes	156	100	78	<.0001*
	no	0	0		
Have you undergone vaccination for COVID19?	yes	39	25	39	< .00001*
	no	117	75		
Do you think covid-19 vaccines should be made compulsory?	yes	123	78.85	51.92	< .00001*
	no	33	21.15		

Questions	Responses	N	%	Chi^2	p value
What is the most common information source that you refer to gather information about covid-19 vaccine?	News	87	55.77	108.92	< .00001*
	Articles	19	12.18		
	Neighborhood	1	0.64		
	Google /Internet	49	31.41		
Is it necessary for a COVID recovered person to take the vaccination?	yes	134	85.90	80.41	< .00001*
	no	22	14.10		
Can a person who recently had covid-19 infection and treated with antibiotic based therapy get vaccinated immediately?	yes	39	25	39	< .00001*
	no	117	75		
Do COVID-19 vaccines contain antibiotics?	yes	90	57.69	3.69	0.05466
	no	66	42.31		
Can a person with bleeding disorder get vaccinated?	Yes	23	14.74	33.50	< .00001*
	No	51	32.69		
	Maybe	82	52.56		
Can the mRNA vaccine change the DNA of a person?	yes	25	16.03	72.03	< .00001*
	no	131	83.97		
Whether pregnant women can get covid-19 vaccination?	yes	69	44.23	2.077	0.14954
	no	87	55.77		
Can children below 10 years get vaccinated?	yes	31	19.87	56.64	<.0001*
	no	125	80.13		
Do you think immuno-compromised patients can get vaccinated?	yes	95	60.90	7.41	0.00649
	no	61	39.10		
Can a person currently having covid-19 (confirmed or suspected) be vaccinated?	yes	37	23.72	43.10	<.0001*
	no	119	76.28		
People who got other non-COVID vaccine should wait for _____ days for taking covid-19 vaccine?	1 Week	9	5.77	45.07	<.0001*
	2 Week	46	29.49		
	3 week	34	21.79		
	1 Month	67	42.95		
Will the new variants be resistant to current covid-19 vaccines?	Yes	33	21.15	67.43	<.0001*
	No	23	14.74		
	Maybe	100	64.10		
Can you test positive even after vaccination?	Yes	139	89.10	95.41	<.0001*
	No	17	10.90		
Whether covid-19 vaccine causes blood clots in patient's body after vaccination?	Yes	80	51.28	0.10	0.74877
	No	76	48.72		

Questions	Responses	N	%	Chi^2	p value
Will the vaccine of covid-19 virus invented from 1 country be effective for all countries?	Yes	92	58.97	5.03	0.02497
	No	64	41.03		
Does diabetic patient need to control their blood sugar before taking covid-19 vaccine?	Yes	126	80.77	59.08	<.0001*
	No	30	19.23		
Are you aware of black fungus attack among COVID recovered patients?	Yes	143	91.67	108.33	<.00001*
	No	13	8.33		

*p<.05 -Significant

Discussion

Dental students as a part of health care workers are susceptible to an increased risk of contacting infectious diseases as part of their clinical training program. Development of a vaccine appears to be the most encouraging signs of restoring normalcy and initiating economic reintegration among general public[8]. Establishing public health policy for sustainable health promotion and adopting vaccination strategies to overcome the COVID-19 pandemic by health care workers is essential to increases the patient's behavioral changes on reducing the mortality and improve the quality of life[9].

In the present study it was observed that all the participants (100%) were aware of COVID-19 vaccines similar to studies by Riad , Zigron et al[2,7] among which 78.85% (123) considered COVID-19 vaccines should be made compulsory for all the health care professionals including dentists even though only 25% (39) have vaccinated during the time of the study similar to studies by Alwazzan and Rieshy et al[8,9] slightly higher than results obtained by Cornwall et al[10], Neumann-Böhme S et. al.[11]. This higher percentage when compared to the predicted acceptance rate of 75% among the health care population in several studies could be due to the influence of awareness programs, local health authority control on disease progression, government policies, proper reporting of number of severely ill patients, and mortality rate however lower vaccination rate could be due to past vaccine history, fear of vaccination protocols, safety and efficacy concerns, preference for physiological immunity, distrust in government and health organizations and personal attitudes toward the COVID-19 vaccines [12,13].

55.77% received information about COVID-19 vaccine through news (media) followed by google /internet (31.41%) and articles (12.18%) similar to studies by Garrett , Ageyukum , Nzaji et al[14,15,16]. The low percentage can be attributed to conspiracy theories and media misinformation that created doubts about the nature, course of disease, prevention, mortality rate, and vaccine safety, and can promote mistrust of the government, policymakers, health authorities, and pharmaceutical companies[17]. Presenting accurate information on social media with evidence based research and reliable sources will help to counter this lower rate.

It was observed that 85.90% felt vaccinations should be taken by COVID recovered person apart from non-infected group however 75% considered vaccination is not necessary immediately for a person who recently had covid-19 infection and treated with antibiotic based therapy or for a person currently having covid-19 symptoms (76.28%) either suspected or confirmed. However recent guidelines by Ministry of Health and Family Welfare (MOHFW), Government of India suggested that it is advisable to receive complete schedule of COVID vaccine irrespective of past history of infection with COVID-19 to aid in developing a strong immune response against the disease[18].

About 52.56% of the participants were unaware of vaccination protocols for patients with bleeding disorder and 60.90% responded immuno-compromised patients can get vaccinated followed by

80.77% considering blood sugar control is mandatory before vaccination in diabetic patients. However 55.77% and 80.13% recommended avoiding COVID19 vaccines in pregnancy and in children respectively . Felten, Boekel, Elimat et al[19,20,21] in 2021 suggested that vaccination was significantly associated with the fear, but not with the presence of additional comorbidities or with the immuno-compromised status. However it is believed that COVID-19 vaccines are well tolerated by patients with autoimmune diseases. Pal et. al. observed very mild adverse effects following vaccination and recommended vaccination should be prioritized in patients with type 1 and type 2 diabetes mellitus as they are at a higher risk of poor prognosis with COVID-19 [22].

Only 42.31% were aware of components in Vaccine and 64.10% are uncertain about the current covid-19 vaccines resistant to new variants. 89.10% were aware of the false negative results and test positive even after vaccination and 41.03% were unsure about the activities of these vaccines invented from one country be effective for all countries. As several vaccines are launched due to the public health emergency, based on data from clinical trials most of the health care workers are unsure about their efficacy[23]. Confidence among health care professionals can be intensified through awareness programs, panel discussion, eliciting their concerns, and involving them in vaccine endorsements. Scientific approach along with Self-identity has been associated with beliefs regarding COVID-19 vaccination[24]. Thus exploring and understanding barriers along with implementation of the infectious diseases epidemiological education and vaccination developments for avoiding the strengthening of vaccine-averse identities within undergraduate dental curriculum for better training of dental students for future outbreaks is necessary.

Conclusion

Most of the dental students were aware of vaccines available for the COVID 19 infection however show very low vaccination rate due to several barriers such as lack of awareness, fear and insufficient data on efficacy and unsure vaccination protocols for patients with systemic diseases. Thus immediate implementation of epidemiology education associated with infectious diseases and vaccination developments should be incorporated by organizing awareness programs along within integrating in the undergraduate dental curriculum.

Conceptualization & Data Curation- Ashika, Elakiya,Malleeswari

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Review & Editing – Dr.Ponsekar Abraham, Dr. K. Sheela

Conflict Of Interest: The author has no conflict of interest for this study

Funding Sources: This research received no external funding

Conflict of Interest: Nil

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