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[1]Public Health Postgraduate Program, Faculty of Medicine, Udayana University
[2]Department of Public Health and Preventive Medicine, Faculty of Medicine, Udayana University
*Correspondence to: sridyantariverra@gmail.com

Teachers' perception on COVID-19 vaccination and preventive behaviour in Denpasar, Bali

Verra Sridyantari[1*], Anak Agung Sagung Sawitri[2], I Wayan Artawan Eka Putra[2]

ABSTRACT

Background and purpose: Teachers as one of the public service providers are at risk of transmitting or contracting COVID-19, so they are prioritized to get COVID-19 vaccination. This study aims to explore teachers' willingness to vaccinate, their behaviour and perception after COVID-19 vaccination.

Methods: We conducted a cross-sectional study involving 200 teachers from 20 primary and secondary schools in Denpasar, who were selected by stratified multistage random sampling. The variables collected are sociodemographic characteristics (age, gender, religion, education, economic status), willingness to be vaccinated, behaviour after the vaccination, and the beliefs which include perceived vulnerability, perceived seriousness, and perceived benefits. Data analysis was carried out descriptively to describe the behaviour and perception of teachers after the vaccination.

Results: Most teachers were middle-aged (31-45 years) and female (74%), with undergraduate education (84%). Most of the respondents were willing to be vaccinated and had been vaccinated (97%). Respondents had a low vulnerability belief of 18%, a high seriousness belief of 8.5% and a low benefit belief of 3.5%. All teachers have intentions to continue implementing health protocols to prevent transmission of COVID-19.

Conclusion: Some school teachers have low perceived vulnerability, high seriousness, and belief of low benefits after vaccination. This shows that teachers are still unsure about the COVID-19 vaccine effectiveness in preventing the transmission of COVID-19, so further education effort is needed.

Keywords: belief, teacher, school, COVID-19 vaccination

INTRODUCTION

Exclusive breastfeeding (EBF) is essential to reduce infant mortality and to prevent stunting.[1-4] The World Health Organization (WHO) targeted 50% of exclusive breastfeeding coverage in all countries by year 2025.[5] Coverage of EBF in Badung District is 70.7%, slightly lower than the coverage in Bali Province (73.8%) and nationally in Indonesia (74.5%).[6-8]

The first case of COVID-19 in Indonesia was reported in March 2020 and since then the number of cases has continued to increase. Until the end of December 2021, there were 4,262,720 positive cases and 144,094 deaths. In 2021 the Province of Bali ranks 7th of the 32 provinces in Indonesia with the highest number of cases. An increase in cases continues to occur every day due to the rapid spread of the virus supported by close human-to-human contact.[1]

Governments around the world and Indonesia have issued various policies to reduce the transmission rate of COVID-19 which emphasize hygiene by washing hands or using a hand sanitizer, wearing masks, and limiting contact between humans and carrying out vaccinations.[2] Apart from that, to limit the occurrence of crowds in public places, a work from home (WFH) and school from home (SFH) policies were implemented.[3]

The SFH policy is considered less effective than face-to-face learning at schools,[3] so the Indonesia Ministry of Education issued an agreement with other ministries to allow schools to reopen in 2021.[4] On the other hand, opening schools for face-to-face learning could potentially lead to a new COVID-19 transmission cluster. Therefore, other prevention efforts are needed by administering vaccines that target priority groups in the first wave (January-April 2021) including public officials, health workers and the elderlies, where teachers are one of the priority public officials.[5]

Vaccination for educators and teaching staff in areas with restrictions on community activities (PPKM) level 1-3 is a must. Vaccination is given at all levels of education facilities, both public and private, formal and non-formal, including religious education.[6] The latest regulations from the Government of Indonesia have also required students aged 6-11 years and over to receive the COVID-19 vaccination before face-to-face learning begins.[7]

Denpasar as the capital of Bali Province has relatively large number of schools, both public and private. The Bali Provincial Government was preparing schools to start face-to-face learning. In preparation for face-to-face learning, apart from vaccination, further studies are also needed on how teachers perceive themselves after receiving vaccinations and their behaviour for preventing transmission of COVID-19 at schools.

When the declaration of the vaccination was first announced in January 2021, the community did not fully respond.[4] A survey on confidence to receiving the COVID-19 vaccination was conducted by the Indonesian Ministry of Health, WHO and UNICEF among 115,000 people, which reported 65% of respondents expressed confidence in receiving the COVID-19 vaccine, while 8% refused, and as many as 27% expressed doubts about the government's plan to distribute the COVID-19 vaccine. Respondents who have adequate knowledge about vaccines and have health insurance are more likely to accept COVID-19 vaccination.[8]

Furthermore, it was reported that the most common reasons for rejection of the COVID-19 vaccine were related to vaccine safety (30%), doubts about vaccine effectiveness (22%), distrust of vaccines (13%), fear of side effects such as fever and pain (12%) and religious reasons that the vaccine is not halal (8%).[8] In addition, rejection occurs because people are afraid of needles and experience side effects after being vaccinated.[6] The WHO Report also shows that vaccination refusals are caused by an abundance of misinformation, false rumours, and conspiracy theories, which can erode their confidence in vaccinations. Acceptance and confidence toward

COVID-19 vaccine are essential, and it is important to understand factors than can influence people's willingness to be vaccinated.[9]

Based on the theory of the Health Belief Model, these factors influence a person's belief in the COVID-19 vaccination effort, where many people think that after vaccination, the susceptibility to infection will decrease so there is no need to carry out COVID-19 health protocols. This study aims to describe the willingness to vaccinate, behaviour after vaccination and perceptions including perceived vulnerability, seriousness, and benefits after COVID-19 vaccination among teachers in Denpasar, Bali.

METHODS

An observational cross-sectional study was conducted in Denpasar City from February to July 2021. The study population was all teachers in Denpasar. Samples were selected using stratified multistage random sampling with two strata, public and private schools, then school were selected proportionately based on the number of elementary, junior high and senior high schools, resulting in 12 elementary schools, 4 junior high schools and 4 senior/vocational schools, with the total number of 20 schools. From each school, 10 teachers were randomly selected so that the total number of samples was 200 people.

The instrument for data collection was a structured questionnaire that had been tested at one of senior high school with a total sample of 38 teachers. Furthermore, the questionnaire was transferred into google form. Data collections were carried out by two trained enumerators. The enumerator interviewed the respondents face to face.

The variables collected in this study were sociodemographic characteristics include age, gender, religion, education, and economic status. While the belief variables include perceived vulnerability, perceived seriousness, and perceived benefits. We used Likert scale from 1-4 with a value of 1=Strongly disagree/very unsure, 2=Disagree/not sure, 3=Agree/Confident and 4=Strongly Agree/Confident. If the statement is negative, then the scoring system will be reversed. For the categorization of low, medium, and high perceived, they are grouped based on the mean value and standard deviation.

Data analysis was carried out descriptively and presented in a frequency distribution table in the form of proportions (%). Meanwhile, to identify teachers' perception after the COVID-19 vaccination based on the characteristics of teachers, a Chi-square Test was carried out.

This research has obtained an Ethical Clearance with number 1269/UN14.2.2VII.14/LT/2021 from the Ethical Commission of the Faculty of Medicine, Udayana University/Sanglah Hopsital and has used the principles of research ethics.

RESULT

The characteristics of the teachers in this study are presented in Table 1. The majority (80%) of respondents were aged 23 to 45 years, and female (74%). As many as 87% of respondents have an undergraduate degree and 38.5% have middle and upper socioeconomic conditions, with a total monthly expenditure range from IDR 2,128,001 to IDR 4,800,000. Respondents in this study were mostly Hindus (84.5%).

At the time of the interviews, there were 194 (97%) teachers who had been vaccinated and 6 (2.5%) stated that they were still waiting for their turn for the second vaccine. All teachers said they would support the government's vaccination program. Furthermore, 52 (26.1%) respondents said they felt no longer at risk of contracting or transmitting COVID-19 after being vaccinated, and all teachers said they would continue to

follow health protocols after being vaccinated (Table 2)

Based on perceived vulnerability after vaccination, most respondents (82.0%) answered disagree or strongly disagree with the statement that they felt they were at a higher risk of contracting the COVID-19 virus, being in a crowd of people, especially during face-to-face learning, working outside the home and doing activities outside the home. For the statement regarding the risk of contracting COVID-19 if you don't use a mask and are more susceptible to getting COVID-19 if you haven't been vaccinated, the majority of respondents (93.5%) answered agree or strongly agree (Table 3).

Regarding perceived seriousness, we found the majority of respondents answered agree (78%) on the item "COVID-19 disease cannot be cured". Whereas in the item "COVID-19 disease has a high mortality rate compared to other diseases, most of respondents was agreed (Table 3).

Respondents also have felt the benefits after the COVID-19 vaccination, including the good impact, reducing the number of people with the disease, provide immune components, and can protect yourself and your family from the threat of COVID-19. All teachers stated that they will continue to carry out the health protocol, they will continue to implement health protocols such as wearing masks, washing hands, maintaining distance, staying away from crowds and maintaining mobility. The reason of teachers continued to implement the health protocol was because "after being vaccinated it doesn't mean you won't be infected with COVID-19", there were also respondents who stated that the health protocol had become a healthy lifestyle habit.

Table 1. Teachers' sociodemographic characteristics

Characteristics	Frequency (n=200)	Percentage (%)
Age (years)		
23-30	82	41.0
31-45	78	39.0
46-60	40	20.0
Gender		
Male	52	26.0
Female	148	74.0
Education		
Diploma	3	1.5
Undergraduate	174	87.0
Master	23	11.5
Socioeconomic*		
Low	67	33.5
Middle Class	77	38.5
Upper class	56	28.0
Religion		
Islam	10	5.0
Hindu	169	84.5
Christian	17	8.5
Catholic	3	1.5
Buddhist	1	0.5

*Socioeconomic classification based on World Bank, 2019 (Lower class (<IDR 2,128,000), Middle Class (IDR 2,128,000- IDR 4,800,000) and Upper class (IDR 4,800,001-IDR 24,000,000)

Table 2. Willingness to get COVID-19 vaccination among the teachers

Statement (N=200)	Yes f (%)	No f (%)	Not yet decided/waiting f (%)
Willingness to be vaccinated against COVID-19 voluntarily.	175 (87.5)	10 (0.5)	15 (7.5)
Continue to support the government's COVID-19 vaccination program.	200 (100)	0 (0.0)	0 (0.0)
After carrying out the COVID-19 vaccination, feel that you are no longer contagious or will not be infected with COVID-19 (n=199)	52 (26.1)	147 (73.9)	0 (0.0)
After the COVID-19 vaccination, would continue to implement health protocols such as wearing masks, washing hands, etc	200 (100)	0 (0.0)	0 (0.0)

Table 3. Perceived vulnerability and seriousness of COVID-19 infection, and perceived benefit of vaccination among the teachers

Statement	Strongly agree	Agree	Disagree	Strongly Disagree	Mean score
Perceived Vulnerability					
Feeling more at risk of contracting the COVID-19 virus	3 (1.5)	31 (15.5)	150 (75)	16 (8)	2.90
In a crowd of people, especially during face-to-face learning, it is easier to catch COVID-19	8 (4)	80 (40.0)	107 (53.5)	5 (2.5)	2.55
When working outside the home it is easier to catch COVID-19	5 (2.5)	79 (39.5)	110 (55)	6 (3)	2.59
If do activities outside the home, such as going to invitations or praying, you are more at risk of contracting COVID-19	6 (3)	81 (40.5)	109 (54.5)	4 (2.0)	2.56
There is a risk of contracting COVID-19 if you don't wear a mask.	30 (15.0)	157 (78.5)	11 (5.5)	2 (1.0)	3.08
Feel more vulnerable to contracting COVID-19 if you haven't been vaccinated	17 (8.5)	105 (52.5)	74 (37.0)	4 (2.0)	2.67
Minimum – Maximum score			12-24		
Mean (SD)			16.33 (1.86)		
Perceived Seriousness					
COVID-19 disease cannot be cured	18 (9.0)	156 (78.0)	26 (13.0)	0(0.0)	2.96
COVID-19 disease has a high death rate compared to other diseases	12 (6.0)	60 (30.0)	118 (59.0)	10 (5.0)	2.63
Minimum Score – Maximum			12-24		
Mean (SD)			16.33 (1.86)		
Perceived Benefits					
The COVID-19 vaccination program will not have a good impact on my life	6 (3)	17 (8.5)	164 (82)	13 (6.5)	2.92
The COVID-19 vaccine can reduce the number of COVID-19 infection	29 (14.5)	156 (78)	14 (7)	1 (0.5)	3.06
After vaccinated, I will get the immune components from the COVID-19 virus	30 (15)	168 (64)	1 (0.5)	1 (0.5)	3.14
After participating in the COVID-19 vaccine program, it can protect me and my family from contracting the COVID-19 virus	27 (13.5)	162 (81)	11 (5.5)	0 (0.0)	3.08
Minimum Score – Maximum			9-16		
Mean (SD)			12.2 (1.203)		

Perception aspects	**Low**	**Middle**	**High**
Perceived Vulnerability	36 (18%)	151 (75.5%)	13 (6.5%)
Perceived Seriousness	34 (17%)	153 (76.5%)	13 (6.5%)
Perceived Benefits	7 (3.5%)	170 (85%)	24 (11.5%)

Around one in five (18%) respondents showed low perceived vulnerability and low perceived seriousness (17%), while a small proportion (3.5%) of them have low perceived benefits of the vaccination and preventive behaviour (Table 3).

Association of teachers' perception and their characteristics

Based on the chi square analysis, it is known that gender (p=0.008) and religion (p=0.005) are associated with the perceived vulnerability. Religion was also associated with perceived seriousness (0.009) and perceived benefits (0.036), while knowledge was associated with perceived benefit (p=0.014). While other variables such as age, education and socio-economic showed no association with perceptions.

Table 4. Association of teachers' perception on COVID-19 vaccination and their sociodemographic characteristics

Charateristics	Perceived Vulnerability	Perceived Seriousness	Perceived Benefits
	P-Value	*P-Value*	*P-Value*
Gender	**0.008**	0.057	0.258
Age	0.942	0.413	0.363
Education	0.225	0.833	0.505
Socioeconomic	0.917	0.760	0.436
Religion	**0.005**	**0.009**	**0.036**
Knowledge	0.360	0.656	**0.014**

DISCUSSION

This study shows an overview of vaccination willingness, teachers' perception including perceived vulnerability, seriousness, and benefits as well as preventive behavior after COVID-19 vaccination.

Teachers' willingness to get COVID-19 vaccination

Teachers involved in the study showed high willingness to get vaccination, and this data is aligned with vaccination data from Denpasar City. Teachers in Denpasar City received the Sinovac vaccine with high acceptance rate at 149.3% of dose I and 132.8% of dose II.[10] Although some teachers feel afraid before vaccination, the majority of teachers in our study have been vaccinated. There are regulations or rules from the government that require all teachers to carry out vaccinations. Administrative sanctions will be imposed if teachers do not want to be vaccinated, such as delaying the payment of salaries (Presidential Regulation No. 14 (2021).[11] In addition, if the teacher's initial dose of vaccination reaches 50-80% and is in the PPKM Level 1 and 2 area, face-to-face learning (PTM) is limited.[7]

There are many factors that affect the willingness to vaccinate against COVID-19, including socio-demographic factors. Those with higher educational level, high-income category, younger age and being women tend to be more willing to be vaccinated.[12] Willingness to be vaccinated is also influenced by work, marital status, religion and ethnicity where other determining factors are age and religion.[14]

Knowledge about the disease is considered to have an indirect relationship with perceptions of vulnerability, severity, benefit, and barriers to action and behavior, the presence of a feeling of fear of reinfection or the status of medical co-morbidities is an indirect predictor of the desire to get vaccinated.[15] Besides knowledge, vaccine acceptability is influence by perception which include perceived severity of COVID-19, perceived benefits of the vaccine, cues for action, self-reported health outcomes, and trust in the health care system or vaccine manufacturers. Lack of trust in vaccine platforms and producers without a track

record also affects people's willingness to administer vaccines.[16]

Teachers' belief after received COVID-19 vaccination

Perceived vulnerability is a person's perception of his own risk of being infected with a disease.[17] In this study, as many as 18% of teachers had perceived low vulnerability, indicate they do not feel more susceptible to COVID-19 infection, despite being in contact with many people in the work place. Low perceived susceptibility is one of the predictors of rejection of influenza vaccine administration in Hong Kong because the people thought they will not get the disease.[18]

The low belief in susceptibility after being given the vaccine can be caused by public conformity, namely changes in the perception or actions of the subject following the majority decision when in the midst of a group of people. One perception on their susceptibility may change because many people in the community were taking the vaccination.[19]

Meanwhile, perceived seriousness of the COVID-19 was relatively high. The high degree of seriousness is felt because the pandemic conditions are getting worse with high levels of morbidity and mortality and it was also a new disease. The large amount of media coverage regarding those who have been vaccinated but are still infected with COVID-19 also has an effect.[20]

On the other hand, perceived benefit among teachers in Denpasar was also high. Public belief and acceptance are important factor in health and disease prevention. Suggestions for wearing masks, washing hands, and implementing social restrictions (3M) are sufficient. Respondents who actively follow the 3M recommendations feel that they have experienced the benefits.[6] A small number of teachers showed low perceived benefit which may due to the benefits of the vaccine was not felt yet, and no antibody tests conducted post vaccination. Whilst, the presence of positive cases of COVID-19 even after vaccination may lead to a public perception that the COVID-19 vaccine was not useful for ending the pandemic.

After receiving COVID-19 vaccination, teachers are remaining obliged to health protocols. In addition to mandatory vaccines for teachers and students, for the implementation of face-to-face learning, schools are also required to always implement health protocol in the school environment.

This study has some limitations. There is a potency of social desirability bias which was tried to minimise by proper inform consent regarding confidentiality of the responses. The study conducted after vaccination program, the perception may change due to the influence of policy or other factors. We also only explore sociodemographic characteristics; future studies should explore other factors with more in-depth method.

CONCLUSION

The willingness of school teachers to be vaccinated was high and most of them have received vaccination. The majority of teachers showed good perceived vulnerability, seriousness and benefits and willing to continue performing health protocols. Continuous campaign for vaccination and health protocols should be conducted to optimise control toward the COVID-19 pandemic.

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AUTHOR CONTRIBUTION

LVS is responsible for the conceptualization and methodology of the original draft writing. LVS also did the formal data analysis and visualization of results. AASS and AEP conducted the supervision for the whole duration of the study. All authors reviewed, edited, and approved the final version of the manuscript.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests.

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