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# Perceptions of the COVID-19 Vaccination among Health-care Professional in Dr. M. Djamil General Hospital Padang

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**Abstract**

**AIM:** It provides a comprehensive overview of coronavirus disease 19 (COVID-19) vaccination perception of health-care professionals in Dr. M. Djamil General Hospital, Padang, West Sumatera, Indonesia.

**METHODS:** This study was conducted from August to September 2021. We assessed perceptions using a questionnaire survey of the health workers and disseminated using Google form. Data entry and analysis were conducted using IBM SPSS version 26.

**RESULTS:** A total of 645 health-care professionals participated in this study. The average age is 36.95 years with 70.35% female. Nurse and general practitioner had the highest positive perception on Sinovac (adjusted odds ratio [AOR] 7.130, 95% confidence interval (CI) 3.406–14.927, p < 0.001). Survivor of COVID-19 participants had lower positive perception on Sinovac compared to non-survivor (AOR 0.347 95% CI 0.208–0.579 p < 0.001). General practitioner had the highest positive perception on Moderna booster (AOR 5.918, 95% CI 1.804–19.414, p = 0.003). Participant who had positive perception on Sinovac also had higher positive perception on Moderna booster (AOR 13.548, 95% CI 6.689–27.442, p < 0.001). Participant with positive perception on Sinovac and Moderna booster more recommends vaccination to other compared to participant with negative perception (AOR 7.699, 95% CI 2.987–19.842, p < 0.001 and AOR 10.545, 95% CI 4.106–27.081, p < 0.001).

**CONCLUSION:** Occupation and survivor of COVID-19 affecting the perceptions of vaccination. The health-care professional who had positive perception of vaccination would tend to recommend COVID-19 vaccination.

## Introduction

The world has fought against the coronavirus disease 19 (COVID-19) pandemic with more than 231 million confirmed cases and 4.7 million deaths reported worldwide up to the 3rd week of September 2021 [1]. Many countries, including Indonesia, fight with a new variant of coronavirus more intensely with 4,201,559 confirmed cases and 141,114 deaths [2]. Vaccination is one of the ways to reduce mortality and slow this pandemic situation. Still, the eradication of COVID-19 appears to be more complicated. However, understanding its mode of transmission and taking appropriate preventive measures are the most essential and life-saving strategies for controlling the disease. The preventive measures recommended frequently are social distancing, appropriate face mask usage, social isolation, and proper hand washing practice or sanitization [3]. In addition to social distancing measures and personal protective equipment, there is a vital need to be vaccinated for COVID-19 to reduce community transmission in Indonesia [4].

Health-care professionals are at the frontline of the COVID-19 pandemic response. Moreover, it has been proven that health workers tend to continue to work without rest and later undergo burnout, mental stress, anxiety, and symptoms of depression, including during the epidemic mitigation [5]. Health-care professionals have an essential part in educating the general public about the source of the vaccine and its implications in the coming years [6], [7]. From the beginning of the COVID-19 pandemic, health-care professionals are working on the front line, despite the higher risk of getting infected and dying [8].

Health-care professionals at Dr. M. Djamil General Hospital are still infected with COVID-19, even though they have been vaccinated twice with Sinovac. So that a third vaccine booster is needed, Moderna is chosen for the third dose. This study aims to assess the perception and affecting factors of Dr. M. Djamil General Hospital health-care professionals toward the COVID-19 vaccination.

## Methods

This study was conducted from August 2021 to September 2021 in Dr. M. Djamil Hospital, Padang, West Sumatera, Indonesia. This is a descriptive study with a cross-sectional approach using a questionnaire survey to assess the health worker's perceptions of COVID-19 vaccination in Dr. M. Djamil General Hospital Padang. The questionnaire content was made by five researchers from internal medicine department. Questionnaire used in the study had four sections. First section was related to participant's sociodemographic characteristics such as age, gender, survivor of COVID-19, comorbidity, vaccine information, benefit, and reason of vaccination. Second and third section assessed the factors that associated with perception of vaccine: Sinovac and Moderna. Fourth section assessed factors that associated with recommendation vaccination to others. The survey was disseminated using Google form. All the health workers in Dr. M. Djamil Hospital were invited to fill the survey.

Continuous variables were expressed as the appropriate means and standard deviation or medians and range categorical variables were summarized as the counts and percentages in each categories. Chi-square and Fisher's exact tests were used or categorical variables. Odds ratio (OR) and 95% confidence interval (CI) were used as common measures to assess relative odds. Multivariate logistic regression was used to determine adjusted OR (AOR). $P < 0.05$ was recognized as statistically significant. All these statistical calculations were performed using the SPSS 26.0 software (SPSS Inc. Chicago, USA).

## Results

A total of 645 health-care professionals contributed to this study. The mean age of sample is 37.5 ± 10.2 years. The number of females in this study is more than male, with the percentage of women are 70.35% and men are 29.7%. Vaccinations have been obtained by participants are Sinovac (100%) and booster Moderna (6.4%). The most reasons for getting vaccines are based on their own desires (85.7%). Generating immunity was the most reason they chosen Sinovac (53.1%) and would choose Moderna as booster (57%) (Table 1).

**Table 1: Characteristics of study participants**

| Parameters | Frequency (n [%]) |
|---|---|
| Age (years) | 37.5 ± 10.246 |
| ≤40 | 383 (59.5) |
| > 40 | 261 (40.5) |
| Sex | |
| Male | 191 (29.7) |
| Female | 453 (70.3) |
| Occupation within medical field | |
| General practitioner | 188 (29.2) |
| Resident | 130 (20.2) |
| Specialist | 77 (12) |
| Nurse | 152 (23.6) |
| Others | 97 (15.0) |
| Source of information | |
| Government appeal | 477 (74.1) |
| Looking by themselves | 88 (13.7) |
| Social media | 52 (8.1) |
| Others | 27 (4.2) |
| Comorbidity | |
| Yes | 146 (22.7) |
| No | 498 (77.2) |
| Survivor | |
| Yes | 260 (40.4) |
| No | 384 (59.6) |
| Reasons for vaccination | |
| Own desire | 552 (85.7) |
| Immunity | 32 (5) |
| Administrative requirement | 49 (7.6) |
| Follow others | 11 (1.7) |
| Reasons for Sinovac vaccination | |
| Mild side effect | 291 (34) |
| Immunity | 342 (53.1) |
| Others | 83 (12.9) |
| Perception on Sinovac | |
| Benefit | 573 (89) |
| No benefit | 71 (11) |
| Perception on Moderna | |
| Benefit | 593 (92.1) |
| No benefit | 51 (7.9) |
| Reasons for Moderna vaccination | |
| Immunity | 367 (57) |
| High efficacy | 98 (15.2) |
| Break COVID-19 spread chain | 36 (5.6) |
| Administrative requirement | 57 (8.9) |
| Others | 35 (5.4) |
| Recommend vaccination to others | |
| Yes | 610 (94.7) |
| No | 34 (5.3) |
| Reasons for recommendation for vaccination | |
| Immunity | 338 (52.5) |
| High efficacy | 61 (9.5) |
| Break COVID-19 spread chain | 125 (19.4) |
| Prevent severe COVID-19 | 50 (7.8) |
| Others | 38 (5.6) |

### *Predictors of perception on Sinovac*

Chi-square and Fisher's exact test to determine the factors associated with perception on Sinovac revealed that occupation, source of information, and survivor of COVID-19 were the factor that affecting perception on Sinovac (Table 2).

### *Age*

Multivariate logistic regression to determine predictors of perception on Sinovac revealed that occupation and survivor of COVID-19 remained as significant predictors. Nurse and general practitioner had the highest positive perception with AOR 7.130, 95% CI 3.406–14.927, $p < 0.001$.

**Table 2: Factor associated with perception on Sinovac**

| Variable | OR (95% CI) | p | AOR (95% CI) | p |
|---|---|---|---|---|
| Occupation within medical field | | | | |
| General practitioner | 6.889 (3.340–14.208) | < 0.001 | 7.130 (3.406–14.927) | < 0.001 |
| Resident | 5.636 (2.601–12.216) | < 0.001 | 6.060 (2.750–13.356) | < 0.001 |
| Specialist | 5.558 (2.179–14.175) | < 0.001 | 5.359 (2.609–13.880) | < 0.001 |
| Nurse | 5.480 (2.647–11.346) | < 0.001 | 7.130 (3.406–14.927) | < 0.001 |
| Others | | | | |
| Source of information | | | | |
| Government appeal | 0.248 (0.033–1.861) | 0.175 | | |
| Looking by themselves | 1.654 (0.144–18.979) | 0.686 | | |
| Social media | 0.462 (0.049–4.347) | 0.499 | | |
| Others | | | | |
| Survivor of COVID-19 | | | | |
| Yes | 0.347 (0.208–0.579) | < 0.001 | 0.331 (0.194–0.566) | < 0.001 |
| No | | | | |

Survival of COVID-19 participant had lower positive perception on Sinovac compared to non-survivor with AOR 0.347, 95% CI 0.208–0.579, $p < 0.001$ (Table 3).

**Table 3: Predictors of positive perception on Sinovac**

| Variable | Perception on Sinovac | | Statistical indices | |
|---|---|---|---|---|
| | Positive | Negative | $\chi^2$ | p |
| Age | | | | |
| ≤40 | 344 (89.8) | 39 (10.2) | 0.683 | 0.409 |
| > 40 | 229 (87.7) | 32 (12.3) | | |
| Sex | | | | |
| Male | 164 (85.9) | 27 (14.1) | 2.68 | 0.102 |
| Female | 409 (90.3) | 44 (9.7) | | |
| Occupation within medical field | | | | |
| General practitioner | 176 (93.6) | 12 (6.4) | 51.274 | < 0.001 |
| Resident | 120 (92.3) | 10 (7.7) | | |
| Specialist | 71 (92.2) | 6 (7.8) | | |
| Nurse | 140 (92.1) | 12 (7.9) | | |
| Others | 66 (68) | 31 (32) | | |
| Source of information | | | | |
| Government appeal | 413 (86.6) | 64 (13.4) | 15.026 | 0.002 |
| Looking by themselves | 86 (97.7) | 2 (2.3) | | |
| Social media | 48 (92.3) | 4 (7.7) | | |
| Others | 26 (96.3) | 1 (3.7) | | |
| Comorbidity | | | | |
| Yes | 129 (88.4) | 17 (11.6) | 0.074 | 0.786 |
| No | 444 (89.2) | 54 (10.8) | | |
| Survivor of COVID-19 | | | | |
| Yes | 215 (82.7) | 45 (17.3) | 17.547 | < 0.001 |
| No | 358 (93.2) | 26 (6.8) | | |

### *Predictors of perception on Moderna*

Chi-square and Fisher's exact test to determine the factors associated with perception on Moderna revealed that occupation, source of information, survivor of COVID-19, and perception on Sinovac were the factor that affecting perception on Moderna (Table 4).

**Table 4: Factor associated with perception on Moderna**

| Variable | Perception on Moderna | | Statistical indices | |
|---|---|---|---|---|
| | Positive | Negative | $\chi^2$ | p |
| Age | | | | |
| ≤40 | 351 (91.6) | 32 (8.4) | 0.246 | 0.620 |
| > 40 | 242 (92.7) | 19 (7.3) | | |
| Sex | | | | |
| Male | 177 (92.7) | 14 (7.3) | 0.129 | 0.719 |
| Female | 416 (91.8) | 37 (8.2) | | |
| Occupation within medical field | | | | |
| General practitioner | 184 (97.9) | 4 (2.1) | 33.446 | < 0.001 |
| Resident | 123 (94.6) | 7 (5.4) | | |
| Specialist | 73 (94.8) | 4 (5.2) | | |
| Nurse | 136 (89.5) | 16 (10.5) | | |
| Others | 77 (79.4) | 20 (20.6) | | |
| Source of information | | | | |
| Government appeal | 426 (89.3) | 51 (10.7) | 32.127 | < 0.001 |
| Looking by themselves | 88 (100) | 0 (0.0) | | |
| Social media | 52 (100) | 0 (0.0) | | |
| Others | 27 (100) | 0 (0.0) | | |
| Comorbidity | | | | |
| Yes | 132 (90.4) | 14 (9.6) | | |
| No | 461 (92.6) | 37 (7.4) | 0.772 | 0.396 |
| Survivor of COVID-19 | | | | |
| Yes | 230 (88.5) | 30 (11.5) | 7.833 | 0.005 |
| No | 363 (94.5) | 21 (5.5) | | |
| Perception on Sinovac | | | | |
| Benefit | 551 (96.2) | 22 (3.8) | 118.634 | < 0.001 |
| No benefit | 42 (59.2) | 29 (40.8) | | |

### *Age*

Multivariate logistic regression to determine predictors of perception on Moderna revealed that occupation and perception on Sinovac remained as significant predictors. General practitioner had the highest positive perception with AOR 5.918, 95% CI 1.804–19.414, p = 0.003. Participant who had positive perception on Sinovac also had higher positive perception on Moderna compared to participant who had negative perception on Sinovac with AOR 13.548, 95% CI 6.689–27.442, p < 0.001 (Table 5).

**Table 5: Predictors of positive perception on Moderna**

| Variables | OR (95% CI) | p | AOR (95% CI) | p |
|---|---|---|---|---|
| Occupation within medical field | | | | |
| General practitioner | 11.948 (3.953–36.109) | < 0.001 | 5.918 (1.804–19.414) | 0.003 |
| Resident | 4.564 (1.843–11.300) | < 0.001 | 2.157 (0.783–5.948) | 0.137 |
| Specialist | 4.740 (1.546–14.532) | 0.006 | 2.255 (0.655–7.757) | 0.197 |
| Nurse | 2.208 (1.081–4.510) | 0.030 | 0.940 (0.399–2.212) | 0.887 |
| Others | | | | |
| Source of information | | | | |
| Government appeal | 0 | 0.998 | | |
| Looking by themselves | 1 | 1 | | |
| Social media | 1 | 1 | | |
| Others | | | | |
| Survivor of COVID-19 | | | | |
| Yes | 0.444 (0.248–0.793) | 0.049 | 0.637 (0.329–1.235) | 0.182 |
| Yes | | | | |
| Perception on Sinovac | | | | |
| Benefit | 17.293 (9.148–32.692) | < 0.001 | 13.548 (6.689–27.442) | < 0.001 |
| No benefit | | | | |

### *Predictors recommendation of vaccination to others*

Chi-square and Fisher's exact test to determine the factors associated with recommendation of vaccination to others revealed that occupation, source of information, perception on Sinovac, and perception on Moderna were the factor that affecting recommendation of vaccination to others (Table 6).

**Table 6: Factor associated with recommendation of vaccination to others**

| Variable | Recommend | | Statistical indices | |
|---|---|---|---|---|
| | Yes | No | $\chi^2$ | p |
| Age | | | | |
| ≤40 | 366 (95.6) | 17 (4.4) | 1.336 | 0.248 |
| > 40 | 244 (93.5) | 17 (6.5) | | |
| Sex | | | | |
| Male | 182 (95.3) | 9 (4.7) | 0.175 | 0.676 |
| Female | 428 (94.5) | 25 (5.5) | | |
| Occupation within medical field | | | | |
| General practitioner | 183 (97.3) | 5 (2.7) | 11.421 | 0.022 |
| Resident | 126 (96.9) | 4 (3.1) | | |
| Specialist | 74 (96.1) | 3 (3.9) | | |
| Nurse | 141 (92.8) | 11 (7.2) | | |
| Others | 86 (88.7) | 11 (11.3) | | |
| Source of information | | | | |
| Government appeal | 446 (93.5) | 31 (6.5) | 11.256 | 11.256 |
| Looking by themselves | 88 (100) | 0 (0.0) | | |
| Social media | 50 (96.3) | 2 (3.8) | | |
| Others | 26 (96.3) | 1 (3.7) | | |
| Comorbidity | | | | |
| Yes | 142 (97.3) | 4 (2.7) | 2.435 | 0.119 |
| No | 468 (94) | 30 (6.0) | | |
| Survivor | | | | |
| Yes | 241 (92.7) | 19 (7.3) | 3.587 | 0.058 |
| No | 369 (96.1) | 15 (3.9) | | |
| Perception on Sinovac | | | | |
| Positive | 560 (97.7) | 13 (2.3) | 94.063 | < 0.001 |
| Negative | 50 (70.4) | 21 (29.6) | | |
| Perception on Moderna | | | | |
| Positive | 579 (97.6) | 14 (2.4) | 127.553 | < 0.001 |
| Negative | 31 (60.8) | 20 (39.2) | | |

### *Age*

Multivariate logistic regression to determine predictors of recommendation of vaccination to others revealed that perception on Sinovac and perception on Moderna remained as significant predictors. Participant with positive perception on Sinovac recommends vaccination to other compared to participant with negative perception with AOR 7.699, 95% CI 2.987–19.842, p < 0.001. Meanwhile, participant with positive

perception on Moderna recommends vaccination to other compared to participant with negative perception with AOR 10.545, 95% CI 4.106–27.081, p <0.001 (Table 7).

**Table 7: Predictors of recommendation of vaccination to others**

| Variables | OR (95% CI) | p | AOR (95% CI) | p |
|---|---|---|---|---|
| Occupation within medical field | | | | |
| General practitioner | 4.681 (1.578–13.892) | 0.005 | 0.817 (0.214–3.125) | 0.860 |
| Resident | 4.029 (1.242–13.070) | 0.020 | 0.882 (0.218–3.573) | 0.793 |
| Specialist | 3.155 (0.848–11.739) | 0.087 | 0.810 (0.167–3.926) | 0.768 |
| Nurse | 1.640 (0.682–3.944) | 0.270 | 0.549 (0.173–1.746) | 0.310 |
| Others | | | | |
| Source of information | | | | |
| Government appeal | 0.553 (0.073–4.214) | 0.568 | | |
| Looking by themselves | 62133647 | 0.997 | | |
| Social media | 0.962 (0.083–11.107) | 0.975 | | |
| Others | | | | |
| Perception on Sinovac | | | | |
| Benefit | 18.092 (8.548–38.292) | < 0.001 | 7.699 (2.987–19.842) | < 0.001 |
| No benefit | | | | |
| Perception on Moderna | | | | |
| Benefit | 26.682 (12.321–57.781) | < 0.001 | 10.545 (4.106–27.081) | < 0.001 |
| No benefit | | | | |

## Discussion

Health-care professional's perception and attitude to COVID-19 vaccination play an essential role in the general population's vaccination behavior through their consultation. The diversity of representation from both age groups, genders, occupation within medical field, source of information, survivor of COVID-19 status, and comorbidity represents strength in the study.

Health-care professional was the first target group for COVID-19 vaccination in Indonesia since January 13, 2021. All health-care professionals in M. Djamil Hospital had been vaccinated with Sinovac and 6.4% had been vaccinated with Moderna booster showed obedience of national regulation by various reasons. The most of participants understand the benefit of vaccination which reflected by own desire (85.7%) and for immunity (5%). Only 9.3% participants did vaccination without understand the benefit that reflected by administrative requirement (7.6%) and follow others (1.7%). Acceptance is higher than the study conducted in the USA with 36% acceptance and 56% hesitancy or study in France with 77.6% participants agreed to get vaccinated [9], [10].

Platform of COVID-19 vaccine has various characteristics of efficacy and side effects. In this study, we found that either inactivated platform (Sinovac) or mRNA platforms (Moderna) had high positive perception among participant (89% and 91.2%).

Understanding the social, demographic, and psychological determinants may help adjust the psychological levels to increase willingness to vaccinate and drive the success of each country's immunization strategy. Participants that have positive perception would tend have positive perception on Moderna booster (AOR 13.548 95% CI 6.689–27.442). General practitioner had the highest positive perception on Sinovac (AOR 7.130, 95% CI 3.406–14.927, p < 0.001) and Moderna booster (AOR 5.918 95% CI 1.804–19.414, p = 0.003). This findings agreed with study by Baghdadi *et al*. (2021) that the COVID-19 vaccine occupation within medical fields was not predictor of recommendation vaccination to others.

Survivor of COVID-19 participants had lower positive perception on Sinovac compared to non-survivor (AOR 0.347 95% CI 0.208–0.579, p < 0.001). In the other hand, survivor of COVID-19 was not predictor of positive perception on Moderna booster (p = 0.182). This could be explained by hesitance in some participants that suffered COVID-19 even though had been vaccinated with Sinovac.

The most of participants would recommend vaccination to others (94.7%) with most reason same as reason for vaccination with Sinovac and Moderna booster: Generating immunity. Positive perception on Sinovac and Moderna were the predictors of recommendation COVID-19 vaccine to others (AOR 7.699, 95% CI 2.987–19.842, p < 0.001 and AOR 10.545, 95% CI 4.106–27.081, p < 0.001). This finding suggests the importance of education to health-care professional as spearhead of COVID-19 vaccine campaign.

## Conclusion

Occupation and survivor of COVID-19 affecting the perceptions of COVID-19 vaccination. The health-care professional who had positive perception of vaccination would tend to recommend COVID-19 vaccination.

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