

Evaluation Moderna Booster Vaccine Recipient Questionnaire for Health Workers in Pharmacies and Hospitals Among Indonesian Citizens

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Keywords: Booster Vaccine, Moderna, Pharmacy/Clinical Health Workers, Hospital/Public Health center Health Workers

Abstract: Evaluating the comparison of the effectiveness and adverse effect following immunization of the Moderna booster vaccine against Health workers in Hospital and Pharmacies in Indonesia and other factors that influence it. This study was a cross-sectional observational study using convenience sampling in 603 respondents working as hospital workers and pharmacists in Indonesia vaccinated with the Moderna booster vaccine, data analysis using SPSS version 25 and Cronbach's I am using the result with the alpha of 0.600. It was found that the efficacy of the Moderna Booster Vaccine on Hospital/Public health center Health Workers and Pharmacy/Clinic Health Workers (87.42% and 96.4%). Other factors that influence adverse effects following immunizations and vaccine efficacy are gender, age, and BMI (Body Mass Index) with a p-value of each variable < 0.05 . The study data show that the efficacy of Moderna booster vaccines varies in the mode of action. The data show that the efficacy of the latest vaccine for HCWs working in hospitals/abscesses is 96.4% higher than the efficacy of the latest vaccine for HCWs working in pharmacies/clinics. Common adverse effects following immunizations after the Moderna booster injection are arm pain, fever, flu, and cough, but the adverse effect following immunizations of nausea is more common in health workers working in pharmacies/clinics 18.27%, compared to health workers working in hospitals/health centers 11.92%.

1 INTRODUCTION

The Novel Coronavirus (SARS-CoV-2) is spreading from Wuhan city Hubei Province, China to the whole corner of the world. Coronavirus is a sense RNA virus positive with starting diameter from 60 nm to 140 nm with a bulge-like nail on the surface that makes it look like a crown below a microscope electron (Singhal, 2020). As of May 30, 2022 (11.13 GMT+7) total Covid-19 cases recorded worldwide have reached more than 531 million cases with Dead more than 6.3 million souls. Vaccines could stimulate system immunity receptors to prevent or reduce the possibility of infection-exposed pathogens. The vaccine is an attenuated virus, vaccine uses pathogenic strains that have been weakened to become non-infectious in non-human tissues, which are then injected into the recipient and are called by the immunity body.

With 6 different vaccines currently in use in Indonesia, Moderna's vaccine has high efficacy, 94-

95% compared to other vaccines already in Indonesia, making Moderna one of the best vaccines. (Araminda & Ramatillah, 2022a). The high death toll associated with Covid-19 is common in frontline energy medicine to combat Covid-19. Therefore, medical personnel will be prioritized for her Covid-19 vaccine booster (Klugar et al., 2021). The Ministry of Health of the Republic of Indonesia provides a Covid-19 booster vaccine that has passed clinical, which has could be used for whole power health both those on duty at pharmacies, clinics, health centers, and homes Sick that is Moderna Booster Vaccine (Tenzin & Dorji, 2020).

The US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) first approved booster vaccines, they are in " group priority " (parents 65 years old to top, people with disease attendant, officer health, and travel. (Overseas people) Residents of the "region risky high " will accept the first booster dose (dose third) between December 24 and 31, 2021. NITAG (National Immunization Technical Advisory Groups)

recommends gift mRNA vaccine (Pfizer or Moderna) for individual booster immunization heterologous. As of January 1, 2022, about 170,000 people (93% of group priority) get booster injections (Naully et al., 2022)

Moderna booster It is a -based messenger RNA (mRNA). The vaccine with packaged in lipid nanoparticles (NP), material viral genetic material (mRNA), in which a spike glycoprotein can give code on the body that causes sticks to the cells host. That's what causes the body to build immunity against the SARS-CoV2 (S) virus, Ingredients vaccine Moderna are ribonucleic acid (mRNA), and fats consisting of (SM- 102, Polyethyleneglycol(PEG)2000, dimyristoyl glycerol(DMG), Cholesterol, 1,2-Distearoylsn-glycerol-3-phosphocholine(DSPC), tromethamine, Tromehamin hydrochloride, acid acetate, sodium acetate, and sucrose (6).

Due to amount cases that have increasingly been exposed to Covid 19 increase so is the amount of power health workers exposed to COVID-19. University of Oxford Medical Evidence Center (Driggin et al. 2020) states that 13.8% of cases positive is worker key main in-service health and sector other. On April 16, 2019, the number of workers with key critical positive- increased to 16.2%. This has a significant impact on the load -of work and stress of frontline workers main, the weakened ability of system care health to handle problems. Situation this implication is whether you are serious to Keep going increase the amount of power health infected with COVID-19. Remember risk to personal, and professional health is often considered Required to do it. Obligation this set in the guiding Code of Ethics for professional health. However, system-effective health- doesn't only depend on the service and skills of professional medical like doctors and nurses. But it also depends on the service professional other (Nyashanu et al., 2020). Although the related data with efficacy and adverse effect following immunizations about Moderna booster vaccine already there is. Study clinical more carry on required about comparison evaluation Among power health work at home sick and those at the clinic/pharmacy in the workforce receiving medical Moderna booster vaccine with seeing various other aspects such as possible sociodemographics existence linkages with efficacy nor adverse effect following immunization from vaccines used.

2 MATERIALS AND METHODS

2.1 Design

This study used a prospective cross-sectional study to evaluate the comparison of efficacy and adverse effect following immunizations between health workers working in hospitals/Public health centers and health workers at pharmacies/clinics using a questionnaire. This research was conducted for 3 months (September – November). For the sampling technique using convenience, sampling through all items that make up the research inclusive criteria. Inclusion criteria were all hospital health workers/health centers and pharmacy/clinic health workers in Indonesia who had carried out the Moderna Booster Vaccination and were willing to give informed consent to be included in the study. Exclusion criteria were all Hospital/Public health center health workers and Pharmacy/Clinical health personnel who had not performed the Moderna booster vaccination, Indonesian people suffering from cancer (stages 3&4), HIV/AIDS sufferers, TB patients, autoimmune patients (Lupus patients).

2.2 Participants

The participants in this study were all Hospital/Public health center health personnel and Pharmacy/Clinic health workers who had been vaccinated with the Moderna booster with a total of 600 respondents, and adverse events. A p-value of 0.05 was considered significant.

2.3 Instruments

This study uses a questionnaire distributed through social media (WhatsApp, Twitter, Facebook, Instagram, and Telegram). The number of questionnaires in this study was 50 questions on identity and comorbidities. The 50 questions were about the adverse effect following immunizations received after the first and second doses of vaccination in the short and long term, as well as monitoring the adverse effect following immunizations of the vaccine for 1-6 months after being vaccinated.

2.4 Statistical Analysis

The collected results were analyzed using the SPSS version 25 application. Fisher, Chi-square, Mann-Whitney, and Kruskal-Wallis tests were used to find associations between risk factors (gender, age, BMI,

vaccine type) and adverse events. A p-value of 0.05 was considered significant.

2.5 Ethical Approval

As stated in Figure 1, ethical approval was obtained before conducting the research from the health research ethics committee of the University of 17 August 1945 Jakarta, with approval letter No.53/KEPK-UTA45JKT/EC/EXP/08/2022

3 RESULT AND DISCUSSION

3.1 Prevalence of Participants by Domicile

This research was conducted spread throughout Indonesia with the percentage of domicile of each respondent 1.16% from West Sumatra Province, 3.48% from South Sumatra Province, 4.81% from North Sumatra Province, 22.06% from DKI Jakarta, Yogyakarta province, 0.17% came from Malaysia, 36.48% came from West Java province, 9.95% came

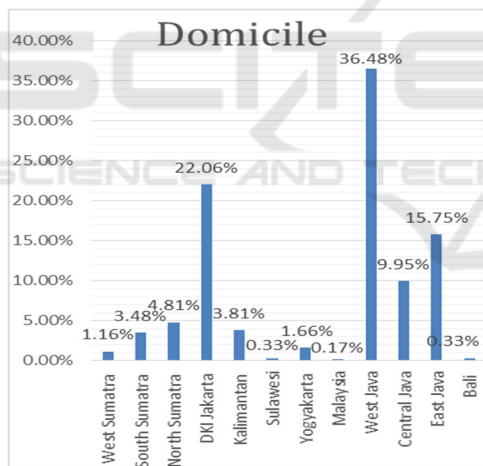


Figure 1: Prevalence of participants by domicile.

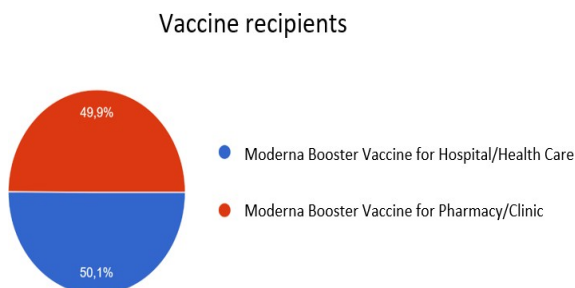


Figure 2: Vaccine Recipient .

3.81% from the Province of Kalimantan, 0.33% came from Sulawesi Province, 1.66% came from from Central Java province, 15.75% came from East Java province, and 0.33% came from the province of Bali, as shown in figure 1. Domicile is not one of the factors that influence the adverse effect following immunizations and vaccine efficacy, this can be seen from the absence of significance between these two varieties.

3.2 Vaccine Recipient and Presentation of Positive Covid - 19

The relationship between the Moderna booster vaccination status carried out on health workers working in hospitals/health centers and pharmacy/clinic health workers with the incidence of Covid-19 shows that the analysis of the data that has been obtained includes health workers in hospitals/health centers who are more exposed to covid after being hospitalized. Vaccination compared to pharmacy/clinic health workers (Pratama et al., 2022) which in hospitals/public health centers as many as 12.58% (n = 302) have been confirmed positive for Covid-19, while in pharmacies or clinics as many as 3.6% (n = 301) have been confirmed positive for Covid-19. This is because health workers who work in hospitals and health centers directly interact with Covid- 19 patients so they are more susceptible to being exposed to Covid-19 than health workers who work in pharmacies/clinics (Pharmd, 2021).

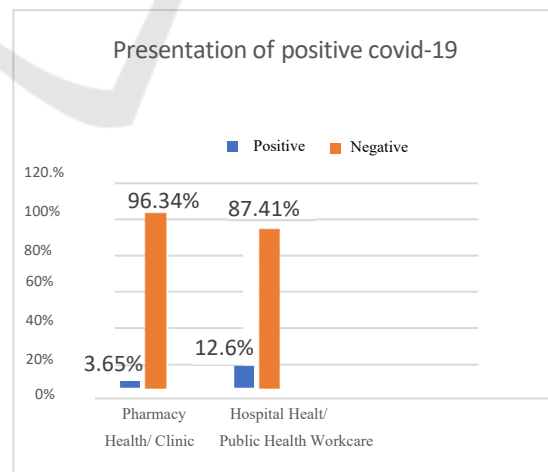


Figure 3: Presentation of Positive Covid – 19.

Table 1: Association between Work Place with Covid Status.

Factor	Hospital/Health Care (n=302)	Pharmacy/Clinic (n = 301)	p-value
Positive Covid-19	Yes = 38 No = 264	Yes = 11 No = 290	0.0001 *
Symptoms	No Symptoms = 16 Mild Symptoms = 25 Moderate Symptoms = 6 Severe Symptoms = 1 Never Get Infected = 254	No Symptoms = 4 Mild Symptoms = 8 Moderate Symptoms = 1 Severe Symptoms = 1 Never Get Infected = 287	0.0001 #
Increase D- Dimer	Yes = 6 No = 46 Never Get Infected = 250	Yes = 1 No = 21 Never Get Infected = 279	0.0001 #
Hospitalized	Home Isolation = 35 Hospital Non- ICU = 5 Hospital ICU = 1 Never Get Infected = 261	Home Isolation = 13 Hospital Non- ICU = 0 Hospital ICU = 1 Never Get Infected = 287	0.0001 #
Positive Covid-19 (1 to 3 months)	Yes = 20 No = 282	Yes = 4 No = 297	0.0001 *
Positive Covid-19 (4 to 6 months)	Yes = 15 No = 287	Yes = 5 No = 296	0.038 *

* = Chi-squared, # = Fisher's Exact

3.3 Association Between Workplace with Covid Status

The results of the weekly morbidity and mortality report on the effectiveness of the third dose of the Moderna booster vaccine show that immunocompromised adults received the third dose of the mRNA vaccine 28 days after the second dose and the currently recommended third dose (booster) 5 months after the second dose. Emphasizes the importance of people immunocompromised adults who are immunocompromised (10). COVID-19 booster vaccine was introduced in the UK on September 14, 2021. Of course, only, using proof from COV- BOOST studies showing that mRNA vaccines have a powerful booster effect with reactivity low miss from vaccine main given, English for immunizations and immunizations The Joint Committee recommends BNT162b2 or health centers and health workers in pharmacies or clinics, are fever (55.6% and 56.14%), and pain in the injection area (75.8% and 77.4%, Cough (13.9% and 13.2%), Flu (17.8% and 18.9%), Nausea (11.9% and 18.2%), Headache (41% and 48.5%), Drowsiness (44.3% and 43.5), Bleeding (1.6% and 1.6), the upper shoulder joint (64.2% and 62.4%), Diarrhea (5.9% and 5.3%) or vaccine half dose (50g) mRNA-1273 (Moderna) as a booster dose in 6 months after finishing the series vaccination main. (Andrews et al., 2022). From a

comparative study of symptoms and antibody response after administration of the Moderna vaccine or SARS-CoV-2 Pfizer, it was found that the antibody response decreased at 6 months, an 84% reduction in Moderna but still higher than in convalescent donors. Antibody response did not correlate with gender or symptom severity (Kelliher et al., 2022).

In the study of absorption of booster doses of COVID-19 among residents of Saudi Arabia, the results of the occurrence of adverse effects following immunizations at the second dose ($p < 0.01$), COVID-19 infection ($p = 0.006$), the severity of COVID-19 symptoms ($p < 0.01$), had COVID-19 after receiving both doses ($p < 0.01$), and the type of presenting symptom ($p = 0.028$) were significantly associated with decreased absorption of the COVID-19 booster dose (Kelliher et al., 2022) the most common adverse effect following immunizations that occur after Moderna booster vaccination, with a comparison of health workers in hospitals.

3.4 Correlation Between Workplace with Adverse Effects Following Immunizations

According to the WHO, a common adverse effect following immunizations after vaccination is injection site pain, fever, fatigue, headache, muscle aches, chills, diarrhea, and a less common adverse

Table 2: Correlation between Workplace with Adverse effects following immunizations.

Adverse effects following immunizations	Hospital/Health Care (n = 302)	Pharmacy/Clinic (n = 301)	p-value
Fever	Yes = 168 No = 134	Yes = 169 No = 132	0.935 *
Pain at Injection	Yes = 229 No = 73	Yes = 233 No = 68	0.701 *
Cough	Yes = 42 No = 260	Yes = 40 No = 261	0.906 *
Flu	Yes = 54 No = 248	Yes = 57 No = 244	0.754 *
Nausea	Yes = 36 No = 266	Yes = 55 No = 246	0.031 *
Headache	Yes = 124 No = 178	Yes = 146 No = 155	0.072 *
Sleepy	Yes = 134 No = 168	Yes = 131 No = 170	0.870 *
Bleeding	Yes = 5 No = 297	Yes = 5 No = 297	1,000 *
Upper arm	Yes = 194 No = 108	Yes = 188 No = 133	0.673 *
Pain In area Injection	Yes = 18 No = 284	Yes = 16 No = 285	0.860 *

effect following immunization is a severe allergic reaction (14). In a study conducted in the United States, the adverse effect following immunizations of the Moderna vaccine was fever (35.65%), headache (59.26%), arm pain (94.21%), nausea (26.62%), and chest pain (1.85%) (Araminda & Ramatillah, 2022b).

The most commonly reported adverse effect following immunizations of the Moderna booster vaccine include injection site pain, headache, malaise, muscle aches, malaise, chills, arthralgia, mucosal lesions, oral paresthesias, taste disturbances, itching, rash, itchy mouth and throat, and throat blockage. reported, muscle cramps, loss of appetite, poor sleep quality, diarrhea, hot flashes, nasal congestion, and difficulty breathing. Local reactions at the injection site, such as urticaria and urticarial rash, have also been reported (Ananth et al., 2021)

In several other studies, adverse effects following immunizations were more common in the Moderna group after the first and second doses. Mild pain at the injection site is common and lasts about 3 days. However, delayed injection site reactions such as erythema, tenderness, and induration are rare and generally resolve within 4-5 days. Fatigue, myalgia, arthralgia, and headache increased after the second dose of the Moderna vaccine and lasted for approximately 3 days. The adverse event rate in the

Moderna arm was independent of age and had no sequelae.

In 18 other studies, adverse effects following immunizations included localized axillary swelling or tenderness ipsilateral to the injection site and generalized rash (Francis et al., 2022). In a study of adverse effects following immunizations of Moderna vaccines in Bangladesh, it was stated that the most common were pain at the injection site (97%), fever (91%), headache (68.29%), and redness/swelling at the injection site (70%) (Mahmud et al., 2022) From a study evaluating the prevalence of adverse effects following immunizations associated with booster doses of mRNA-based Covid-19 vaccines among health workers in the Eastern Province, Saudi Arabia. Get results from study ie, 81.84% (401/490) of professionals participating in health report at least one effect side after accepting of COVID-19 vaccine. 3 (1-4) effects side reported (median (IQR)), (88.73%) reported, effect most frequent side reported is the sick head (28.68%), painful joints or bone (27.18%), myalgia (26.43%), nausea or vomiting (21.2%), fever (18.95%), and rash (10.22%), whereas effect the rarest side reported is redness the place injections (8.23%), chills (7.98%), fatigue (7.73%), and swelling the place injection. delayed menstruation (Ali et al., 2022)

In the COVID-19 phase 4 vaccine candidate study, the effectiveness of SARS-CoV-2 variants,

neutralizing antibodies, rare adverse effect following immunizations, and traditional and nano-based vaccine platforms were demonstrated by the participant who accept two doses of mRNA-1273 28 days after the dose first. All participants were -shaped into three groups (n = 15) according to doses of 25 g, 100 g, or 250 g (Jackson et al. 2020). Response more antibodies strongly reported (Naully et al., 2022) after the dose first vaccine, 5 participants (33%) in the 25-gram group, 10 participants (67%) in the 100-gram group, and 8 participants (53%) in the 250-gram group reported effects of side light or medium. After the dose second, 7 of 13 (54%) participants were in a group of 25 g, 15 of 15 (100%) participants in the 100 g group, and the g group in a group of 250 grams. Three participants in the 250-gram group reported one or more effect serious side. For fever, no some participants experienced fever after the dose first (Zarreen et al., 2022)

4 CONCLUSION

The research data shows that there are differences in the effectiveness of the Moderna booster vaccine in the type of work; where in the data shows the effectiveness of Moderna vaccine is found to be higher in health workers working in hospitals/health centers by 96.4% compared to the effectiveness of Moderna vaccine in health workers who work in Pharmacies/clinic by 87.43%. The adverse effect following immunization nausea is the highest for health workers who work in pharmacies/clinics, which is 18.27%, compared to health workers who work in hospital/health centers by 11.92%.

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