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RESEARCH

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The Influence of External Factors on Immunomodulatory Consumption Practices in Health Workers During The Covid-19 Pandemic

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Abstract

The need for the consumption of immunomodulators is very important to support the body's immunity of health workers during the Covid-19 pandemic to remain prime in providing services. Because the health of healthcare workers during the pandemic determines the service that will be provided to patients. This study aims to analyze the influence of external factors on the practice of consuming immunomodulators in health workers at the Denpasar City Health Center. This research is non-experimental research using a cross-sectional method. The population of the research is 550 people and the sample size used in this study amounted to 232 people who have met the inclusion criteria. The results obtained for R square were 0.605 which indicated that the support of the head of the Health Center, family support, co-worker support, and advertising promotion had a large role, namely as much as 60.5% in influencing the practice of consuming immunomodulators in health workers. The R-value obtained in this study was 0.778; F of 86,852; and p of 0.000 ($p < 0.05$) where the hypothesis is accepted, which means that there is a significant influence of external factors on the practice of consuming immunomodulators. There is a significant relationship between the support of the head of the Health Center, family support, co-worker support, and advertising promotion on the practice of consuming immunomodulators. External factors greatly influence healthcare workers' attitudes toward maintaining their health, one of which is their responsiveness in consuming immunomodulators during the pandemic.

Keywords: Covid-19, Immunomodulator, External Factors, Health Workers.

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1. INTRODUCTION

Bali is one of the regions of Indonesia which is the center of world tourist destinations. This place not only brings tourists from various foreign countries but also poses a threat to the spread of infectious diseases, one of which is Coronavirus diseases-2019 or known as Covid-19. In December 2019, the first case of Covid-19 was reported in Wuhan, China and until now its spread has hit the whole world to Indonesia, especially Bali. In Indonesia, the number of confirmed cases of Covid-19 was recorded at 6,338,906 cases with a death toll of 157,478 cases since January 3, 2020 to date (WHO, 2020).

Denpasar city is one of the areas in Bali with a dense population with population of 997,489 people (Dinas Kesehatan Provinsi Bali, 2021). Because it is a city center that causes this area to have high population mobility. This has an impact on the spike in cases that occurred during the pandemic. As a result of the spike in cases, the city of Denpasar is classified as a red zone so that the government maximizes the role of health service facilities such as health centers to be fully involved in laboratory examinations to enforce the Covid-19 diagnosis and the tracing process. There are eleven health centers in the Denpasar city area, including three health centers in the North Denpasar area, two health centers in the East Denpasar area, two health centers in the East Denpasar area, two health centers in the West Denpasar area, and four health centers in the South Denpasar area. The types of health workers involved in the health center at least consist of doctors, nurses, dentists, midwives, medical laboratory technology experts, public health workers, environmental health workers, nutrition and pharmacy personnel. In providing services to patients, health workers not only prioritize the interest and safety of patients, but also pay attention to their own safety and health at work (Kementerian Kesehatan Republik Indonesia, 2015).

In an effort to break the spread of the Covid-19 chain, the government has implemented a program the Indonesian government has sought to break the chain of the spread of Covid-19 in various ways, one of which is by requiring the public to implement the health protocol through the 5M movement, namely wearing a mask, limiting mobility, avoiding crowds, washing hands, and keeping a safe distance (Kementerian Kesehatan Republik Indonesia, 2021). In addition to complying with health protocols, health workers must also increase immunity by consuming nutritious and balanced foods and consuming immunomodulators in the form of multivitamins, both herbal and synthetic.

To increase the body's immunity, the need for immunomodulators plays a very important role in the body. Immunomodulators are substances that can induce, strengthen, and inhibit any component or phase of the immune system. There are two types of immunomodulators, namely immunostimulators and immunosuppressants (Utama, Rosidah & Yuandani, 2020). Immunomodulators can be sourced from natural materials such as secondary metabolites contained in plants such as flavonoids, phenolics tannins, and so on (Catanzaro et al., 2018). Meanwhile, immunomodulators derived from synthetic materials include vitamin A, vitamin C, vitamin D, vitamin E, and so on. Deficiency of these immunomodulatory sources in the body is associated with impaired immune response, respiratory tract infections, and susceptibility to Covid-19 infection (Shoemaker et al., 2022).

Although the pandemic has ended, but studies related to the Covid-19 pandemic must continue to be examined as various new diseases from microorganisms that are beginning to mutate emerge. Based on the description above, the consumption of immunomodulators plays a very important role in the immunity of health workers during the pandemic when providing services to suspected and positive Covid-19 patients. This study aims to analyze the influence of external factors on the practice of consuming immunomodulators in health workers at the Denpasar City Health Center.

2. RESEARCH METHOD

This research is non-experimental research using the cross-sectional method. The location of this research is in the entire Denpasar City Health Center which consists of eleven Health Centers consisting of three Health Centers in the North Denpasar area, two Health Centers in the East Denpasar area, two Health Centers in the West Denpasar area, and four Health Centers in the South Denpasar area. This research was conducted during the second wave of the Covid-19 pandemic, from January to December 2021. The population in this study were all health workers consisting of health workers and administrative staff who served at the Denpasar City Health Center, amounting to 550 people. The sample size used in this study amounted to 232 people who met the inclusion criteria. The instrument used in this study was a questionnaire in the form of a questionnaire with the following inclusion criteria: working as medical staff, paramedical staff, and non-medical staff at community health centers in the Denpasar city area, still actively working, and not having any serious illnesses. The questionnaire was distributed to eleven health centers either directly (printed questionnaire) or indirectly (via the WhatsApp application in the form of Google Form). Before filling out the questionnaire, respondents were given an informed concern first. The independent variables in this study are external factors consisting of support from the head of the Health Center, family support, support from colleagues, and advertising promotions. The dependent variable in this study is the practice of consuming immunomodulators for health workers at a regression test consisting of an assumption test (heteroscedasticity test and multicollinearity test) and hypothesis testing (regression test). The implementation of this research has received approval from the Research Ethics Commission of Bali International University number 01.028/UNBI/EC/I/2022.

3. RESULTS AND DISCUSSION

Any individual who is committed to the health sector and has received education in the field and possesses the knowledge and abilities necessary to carry out health initiatives is considered a health professional (Casey et al., 2017). Health workers are people who are at great risk of contracting Covid-19 because they are always in contact with Covid-19 patients to provide care. According to earlier studies, healthcare professionals made up 21% of individuals afflicted during the 2020 SARS outbreak. Six healthcare professionals in China have died as a result of the disease's almost 1,500 infections to date. Protecting healthcare workers is critical to ensuring continuity of care and preventing infection to other patients (Chang et al., 2020). As health workers, workers at the Denpasar City Health Center have knowledge that is implemented through the attitude and behavior of implementing health protocols, one of which is an effort to increase immunity by supplementing the need for immunomodulator consumption while working during the Covid-19 pandemic. The healthcare service system is an important part of improving health standards. Through this system, health development goals can be achieved effectively, efficiently, and accurately. The success of the healthcare service system depends on various components involved in healthcare services, including nurses, doctors, or other healthcare teams that support each other. This system will provide effective healthcare service quality by considering the values present in the community. In healthcare services, nurses are also expected to provide quality care (Widayati, Yustina & Sulistyanto, 2019).

This research was conducted at the Denpasar City Health Centre with 232 respondents spread across eleven Health Centers who work as health workers and administrative staff. Based on the results of the research on the Covid-19 history category, all respondents were found to be 66% positive for Covid-19 and 34% negative for Covid-19.

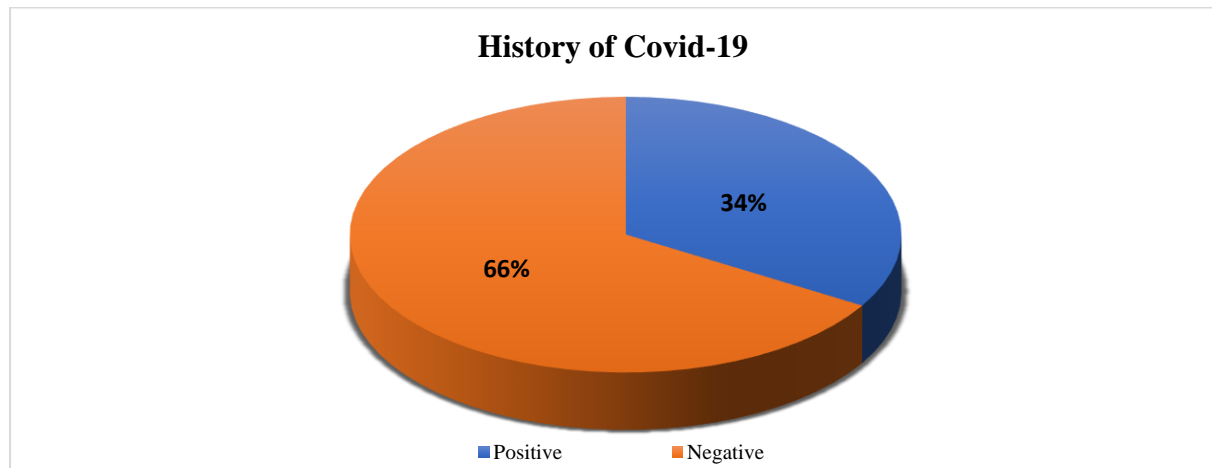


Figure 1. The Respondent's Covid-19 History

Based on the history of Covid-19 respondents, it can be seen that most of them are negative for Covid-19 because they have implemented health protocols and increased immunity during the pandemic. Some ways to reduce the risk of contracting Covid-19 are by implementing health protocols through the 5M movement (namely wearing masks, maintaining distance, washing hands, avoiding crowds, and reducing mobility) (Kementerian Kesehatan Republik Indonesia, 2021). In addition, health workers must also increase immunity by consuming nutritious and balanced foods and immunomodulators in the form of multivitamins (both herbal and synthetic).

Table 1. Heteroscedasticity Test With Glejser Analysis and The Multicollinearity Test

DV	IV	p-value	Tolerance	VIF
Immunomodulator	Health Center Head Support	0.081	0.399	2.509
Consumption Practices	Family Support	0.163	0.369	2.708
	Co-worker Support	0.219	0.279	3.583
	Advertising Promotion	0.872	0.579	1.726

Table 1 shows that the heteroscedasticity test with Glejser analysis obtained a significant value for the support of the head of the health center 0.081, family support of 0.163, support of colleagues of 0.219, and advertising promotion of 0.872 ($p > 0.05$). This indicates that the four variables have no heteroscedasticity symptoms in the regression model.

The multicollinearity test was also carried out in this study to look at the tolerance and VIF values with the results stating that the support variable for the head of the public health center with a tolerance value of 0.399 and VIF of 2.509, family support with a tolerance value of 0.369 and VIF of 2.708, support from colleagues with a tolerance value of 0.279 and VIF of 3.583, advertising promotion with a tolerance value of 0.579, and VIF of 1.726. This indicates that there is no multicollinearity.

Table 2. Hypothesis Test

Variables	R	R-square	F	P-value	Description
Health Center Head Support Family Support Coworker Support Advertising Promotion	0.778	0.605	86.852	0.000	There is a significant relationship between the support of the Head of Health Center, Family Support, Co-worker Support and Advertising Promotion on The Practice of Consuming Immunomodulators

Table 2 shows that the hypothesis testing shows that R square obtained a value of 0.605 which indicates the four external factors variables have an effect of 60.5% on the practice of consuming immunomodulators. The R-value obtained is 0.778, the F-value is 86.852, and the p-value is 0.000 ($p < 0.05$). Thus, the hypothesis is accepted, which means that there is a significant influence from external factors in the form of support from the head of the Health Center. Family support, co-worker support, and advertising promotion on the practice of consuming immunomodulators at health centers in the Denpasar City area.

The results of the analysis show that there is a significant positive effect between the support of the head of the Health Center on the practice of consuming immunomodulators for health workers. This means that the higher the support from the head of the Health Center towards health workers, the better implementation of the practice of consuming immunomodulators as an effort to increase their immunity during the pandemic. This can be seen from the role of the head of the Health Center in facilitating health workers with multivitamins while working during the pandemic. The results of this study are supported by previous research conducted by [Halton et al. \(2016\)](#) which states that to improve adherence to infection prevention and control, it is necessary to have support from superiors, health workers do not prevent infection if the leaders themselves do not comply with infection prevention. Furthermore, strong organizational support is a key element of good clinical governance, with good clinical governance continuously improving safety and quality of care.

Employee performance is positively and significantly impacted by the leadership variable. Employee performance is positively and significantly impacted by the motivation variable. Employee performance is positively and significantly impacted by motivational factors and leadership style ([Syuhada et al., 2022](#)). Leadership has a significant impact on organizational performance and the quality of healthcare services. Effective leadership can create positive changes in building high-quality healthcare services, improving the work environment, and enhancing the quality of public services ([Amir et al., 2021](#); [Lona et al., 2023](#)). Safety-oriented leadership must start from the stakeholders and then extend to all health center leaders so that they can motivate and enhance their staff's knowledge about why patient safety and occupational safety are essential for them when working in the hospital ([Permanajati & Hastuti, 2023](#)). Creating the performance of healthcare workers in health services greatly contributes positively to patient safety ([Mulyatiningsih & Sasyari, 2021](#)).

In this study, family support factors also played a role in the practice of consuming immunomodulators during the pandemic. The research is in line with the research of [El-Zoghby et al. \(2020\)](#) who stated that to reduce the severe impact of the Covid-19 pandemic, there was an increase in social support from family members as much as 40.6% of 510 respondents. This research is also in line with [Santoso \(2020\)](#) which states that social support, especially from family, plays an important role in the Covid-19 pandemic situation. Great social support obtained by respondents from the family includes emotional support in the form of empathy, informative support like suggestions, feedback, and instructions on the use of immunomodulators, instrumental support in the form of giving an opportunity to work during a pandemic, assistance in increasing immunity, and positive assessment in the form of awarding ([Rozana & Purnama, 2022](#)). In addition, this study is also consistent with the study conducted by [Alvita & Christin \(2021\)](#) which indicates that family support plays a very important role in implementing medical procedures to prevent Covid-19 during the pandemic. As many as 89.6% of respondents received good support from their families. This support can be in the form of attention, encouragement, and enthusiasm in efforts to implement health protocols including efforts to increase immunity.

Social support plays an important role for health workers in caring for patients during Covid-19. Social support can take the form of information, assessment, tools, and emotions ([Yamamoto et al., 2020](#)). One social support can come from colleagues who can provide social

support in the emotional, material, and spiritual aspects (Zhu et al., 2020). Social support plays a role in the welfare of health services, namely for health workers to adapt and social support is emphasized in times of crisis as an individual coping mechanism. Social support is important not only to reduce negative symptoms, but also to facilitate positive adjustment after Covid-19 (Saltzman et al., 2020). Health services need to adapt to be able to provide optimal and safe services for patients (Mulay et al., 2020). A previous study by Latuperissa et al. (2022) suggested that social support affects the adaptation of health services to healthcare workers during the Covid-19 pandemic. Someone who receives strong encouragement from external parties, including family and colleagues, will tend to perform their work with confidence and enthusiasm. Motivation has a direct impact on an individual's job excitement, making it a crucial component of effective employee performance (Syardiansah et al., 2021).

In this study, it was found that advertising promotion through social media (Instagram, Facebook, and Tiktok) also affected the practice of consuming immunomodulators. This is in line with the study conducted by Lestari et al. (2020) which proves that there is an effect of advertising on medicinal products consumption behavior in the community in Tanah Patah Village, Bengkulu City. This is because advertising functions to convey information, and persuade or remind the public of medicinal products so that people are affected by medicinal product advertisements on social media. This is also supported by research by Leonita & Jalinus (2018) which revealed that social media has a positive contribution to health promotion efforts. One of them is by promoting health products that can support the body's immunity during the Covid-19 pandemic. Based on previous research, there is a positive influence of Social Media Marketing Activities (SMMA) on purchasing decisions, which means that if social media marketing activities increase, purchasing decisions will also increase (Alverina & Achmadi, 2023; Savitri et al., 2022). Chakraborty and Paul (2021) also stated that there is a significant positive relationship between consumption values and healthcare apps purchase intention. The advantage of this research lies in its novelty, as it has never been conducted before regarding external factors affecting the consumption of immunomodulators among healthcare workers, especially in facing pandemic conditions. The limitation of this study is that the factors examined are only the main factors, namely the support of the head of the community health center, family support, coworker support and advertising promotion for the practice of consuming immunomodulators, so it is necessary to further explore other external factors that also influence.

4. CONCLUSION

It can be concluded that there is a significant relationship between external factors and the use of immunomodulators. External factors such as support from the head of the Health Center, family, coworkers, and advertising promotions greatly influence healthcare workers' behavior in consuming immunomodulators as an effort to boost the body's immunity during the pandemic. In the future, in facing the developments of diseases in the health sector, the frontline such as healthcare workers must receive significant support through these external factors so that they can provide excellent service to patients.

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