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PREVALENCE OF MASK USE DURING EXERCISE AT PUPUTAN MARGARANA RENON FIELD, DENPASAR CITY DURING THE COVID-19 PANDEMIC

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ABSTRACT

Introduction: The Covid-19 pandemic requires people to wear masks as a preventive measure. In addition, exercise is also highly recommended because it can prevent metabolic and infectious diseases by boosting the immune system. During this period, the government issued several regulations regarding the obligation to wear masks which certainly affected people's sports activities, especially in public spaces such as Puputan Margarana Renon Field, Denpasar City.
Method: A total of 2023 people were counted in this study. This study used a visual observation method to count the number of people who used masks and those who did not, and what type of masks were used.
Result: A total of 737 people (36.43%) used masks while 1286 people (63.57%) did not use masks. This low prevalence of mask use can be based on several factors such as concern, discomfort, and non-compliance. The 737 mask users are divided into several types of masks used, including surgical masks (45.45%), KF94 masks (17.91%), duckbill masks (17.91%), cloth masks (8.01%), scuba masks (4.48%), and cloth mask with valves (0.81%). Each of these masks has its advantages assessed through the aspects of effectiveness, price, tightness, and various other aspects.
Conclusion: It can be concluded that the prevalence of using masks when exercising at Puputan Margarana Renon Field, Denpasar City is still quite low (36.43%) with the most commonly used masks being surgical masks (45.45%).
Keywords: Mask., Exercise., Covid-19

INTRODUCTION

The Covid-19 pandemic that has hit the world since early 2020 and has infected around 700 million people to date has significantly changed people's habit and lifestyles.[1] During the last pandemic, people were encouraged to wear masks as one of the preventive measures that was widely implemented around the world. The Indonesian government, through various related institutions and ministries, issued regulations regarding the use of masks and various other transmission prevention efforts as stated in various regulations issued by the government at that time.[2,3]

On the other hand, during this period, people are also encouraged to stay active by doing physical activities to exercise regularly. Exercise can be beneficial in preventing various metabolic diseases and infectious diseases by boosting the immune system.[4] Sports activities can be carried out indoors or outdoors such as at Puputan Margarana Renon Field, Denpasar City. The existence of regulations regarding the obligation to wear masks certainly also affects community sports activities, especially those carried out in open fields, in this case at Puputan Margarana Renon Field. At the time this study data was collected, the government was implementing a level 3 Community Activity Restriction or *Pemberlakuan Pembatasan Kegiatan Masyarakat* (PPKM) in Denpasar City, which means that activities in public facilities can be opened up to 50% with the community required to strictly implement health protocols, including the use of masks.[3]

The importance of maintaining health and implementing health protocols in the midst of a pandemic makes the use of masks an inevitable step, including when exercising.[2–4] However, not all people comply with these regulations, which can be seen from compliance in wearing masks. One possible explanation for this phenomenon is the fear of negative impacts that may arise when exercising with a mask. This concern is certainly based on relevant evidence because there is indeed confusion of information in terms of wearing masks when exercising.[5–8]

Until now, there are still few studies that review the prevalence of mask use when exercising in open fields, such as the Puputan Margarana Renon Field. Therefore, this study aims to find out more about the prevalence of mask use when exercising in the field and identify factors that influence community compliance in implementing this health protocol as well as knowing the types of masks commonly used by people in Denpasar City.

MATERIALS AND METHODS

The sample of this study was the people of Denpasar City or tourists who were exercising in the Puputan Margarana Renon field, Denpasar. The total number of samples counted in this study was 2023 people. The data obtained was collected from Saturday, February 19, 2022 to Saturday, February 26, 2022. The time of data collection on each day varied between morning at 6:00 am - 7:00 am or afternoon at 5:00 pm - 6:00 pm. The duration of data collection is 15 minutes which is based on the estimated duration of one person around the field.

Data collection was conducted using visual observation method by two surveyors next to each other. Each surveyor counted the number of people wearing and not wearing masks, and if wearing a mask, what type of mask was used. The results of the calculation were then matched with each other. If the results are the same, the data is considered valid and recorded in this study. If there is a difference in data between one surveyor and another, data collection will be repeated. We only counted people who were engaged in physical activity, either running or walking, who passed by the surveyors. Visitors who were sitting in the park or not doing physical activity were not counted. The results of the 8 consecutive days of counting were then recapitulated and presented in tabular form in the next section.

RESULTS

Table 1. Prevalence of Mask Use when Exercising at Puputan Margarana Renon Field, Denpasar City on February 19-26, 2022

Description	Number (n)	Percentage (%)
Wearing a mask	737	36.43
Not wearing a mask	1286	63.57
Total	2023	100.00

Table 1 shows the number of people who wear masks when exercising is 737 people or equivalent to 36.43% and the number of people who do not wear masks when exercising is 1286 people or equivalent to 63.57%.

Table 2. Types of Masks Used by the Public when Exercising at Puputan Margarana Renon Field, Denpasar City on February 19-26, 2022

Description	Number (n)	Percentage (%)
Surgical masks	335	45.45
KF 94 masks	132	17.91
Duckbill masks	132	17.91
Cloth masks	59	8.01
Scuba masks	33	4.48
Cloth masks with valve	6	0.81
Total	737	100.00

Table 2 in the results section shows that the masks used by the community when exercising in Denpasar City, ranging from the most frequent to the least frequent, include surgical masks (45.45%), KF94 masks (17.91%), duckbill masks (17.91%), cloth masks (8.01%), scuba masks (4.48%) and cloth mask with valves (0.81%). Other masks such as N95 masks and reusable facepiece respirators were not used by the community in this study observation series.

DISCUSSIONS

Prevalence of mask use at Puputan Margarana Renon Field, Denpasar City

The results obtained in Table 1 show that the rate of mask use during exercise cannot be said to be satisfactory when compared to a survey conducted by the Central Statistics Agency in September 2020. In the survey, it was found that 92% of Indonesians complied with using masks.[9] This can be said to be quite disappointing because only 36.43% of the community complied with the rules of the implementation of the Restriction of Community Activities or *Pemberlakuan Pembatasan Kegiatan Masyarakat* (PPKM) level 3 in Denpasar City which at that time was applied until February 28, 2022. The implementation of PPKM level 3 means that people can carry out activities in public spaces up to 50% while still implementing strict health protocols, one of which is by wearing a mask.[3]

Several factors may contribute to this low prevalence of mask use. First, there is a possibility that people are worried about the effects of exercising with a mask. This is evidenced by several studies that show inconsistent results between one study and another. Some studies such as the one presented by Driver et al. (2022) showed that use mask during exercise decreased exercise ability by 14% and decreased VO2 maximal by 29%.[10] On the other hand, other studies such as those conducted by Chandrasekaran & Fernandes (2020), Rojo-Tirado et al. (2021), and Kisielinski et al. (2021) state that the use of masks can have an impact on the body including leading to hypoxic conditions [5,11,12]. On the other hand, there are also several studies that convey that masks during exercise have no significant impact. Some of these studies, including those submitted by Shein et al. (2021), Barbieri et al. (2020), and Shaw et al. (2020) state that the use of masks does not have a significant impact on body condition while exercising.[7,13,14]

Other than the worry factor, there are also other factors that may influence non-compliance with health protocols, especially the use of masks. Some of these factors include physical discomfort such as difficulty breathing, lack of effectiveness, or in certain circumstances that cause non-compliance. This was conveyed in a study conducted in the United States during the Covid-19 pandemic through tweets submitted on the Twitter application (now X).[15]

Types of masks used by the public when exercising at Puputan Margarana Renon Field, Denpasar City

There are various types of masks available in the community. Each mask has its own advantages. Surgical masks have advantages in that they are relatively cheap, can prevent the entry and exit of large droplets, and can prevent the exit of small droplets. However, surgical masks have loose tightness, the potential for leakage, cannot prevent small droplets from entering, and the filtration effectiveness is quite variable, which is around

30 - < 95% for 0.1 micron size depending on the tightness when using it.[16] During the Covid-19 pandemic, this mask can prevent transmission by 78% and prevent deaths from Covid-19 by 87%.[17] The balance between the advantages and disadvantages of this type of mask such as the low price but providing good protection is estimated to make this mask the choice of the majority of people.

On the other hand, the KF 94 mask, which is comparable to the N95 and KN95 masks, has the advantage of preventing small and large droplets from entering and leaving the mask. The filtration effectiveness of this mask can be said to be high with a filtration rate more than 95% for a particle size of 0.1 microns with tight use. However, this mask has a relatively expensive price when compared to other masks.[16] Study conducted by Tanisali, et al. (2021) shows that N95 masks without valves are ranked first in contamination area, which means they have the highest effectiveness.[18]

In addition, there are no studies to date on duckbill masks. However, based on its similar characteristics to surgical masks such as loose fit, number layers of mask, and similar price range, it can be expected that the effectiveness of duckbill masks will be close to that of surgical masks. Furthermore, cloth masks are the only reusable masks other than reusable facepiece respirators that are very expensive. In addition to these advantages, cloth masks are also superior in terms of price when compared to the lifetime of other masks. They tend to be loose-fitting, with a filtration effectiveness of 10 - 60% for a particle size of 3 microns depending on the tightness of the mask, which ranks them at the bottom in terms of filtration effectiveness. It can only protect against the ingress and egress of large droplets but not small droplets.[16] However, during the Covid-19 pandemic, cloth masks can be said to be quite successful in helping prevent transmission by 69% and prevent deaths from Covid-19 by 82%, which makes it a mask that can be chosen in the midst of mask scarcity as in the early days of the Covid-19 pandemic.[17]

Furthermore, scuba masks became masks whose status was prohibited by the government during the Covid-19 pandemic.[19] There were rumors that the mask ban was due to political reasons, which has been confirmed as misinformation.[20] In fact, the ban on the use of these masks is because they have very low effectiveness and are below the national standard.[19] On the other hand, valve cloth masks have not been studied to date. However, based on the same material, the characteristics of a cloth mask with a valve are not expected to be much different from those of a cloth mask without a valve. It can also be expected that masks with valves can actually increase the extent of contaminated region, which is bad. This is based on study conducted by Tanisali, et al. (2021) which shows that the contaminated region of N95 masks with valves is greater than N95 without valves.[18]

Therefore, it can be concluded that there are quite a few types of masks that can be used by the public community. Each mask has advantages and disadvantages by itself. People can assess individual needs on an individual basis regarding what type of mask to use. In terms of daily activities, surgical masks and cloth masks have proven to be quite effective in preventing the transmission of SARS-CoV-2 during the last Covid-19 pandemic. In terms of high-risk activities, people can use more tight masks such as KF94, N95, and KN95.

CONCLUSIONS AND SUGGESTIONS

The prevalence of mask use when exercising at Puputan Margarana Renon Field, Denpasar City during the Covid-19 pandemic was 36.43%. The type of mask most often used by the community when exercising is a surgical mask (45.45%) followed by several other types of masks.

This study is not perfect. We cannot ensure that people who have been counted on the previous day are not counted again on the next day. The location we took was also limited to the Puputan Margarana Renon field. Further study can be done to improve these shortcomings. This study can be continued to look at the effects of using masks when exercising on the human body to answer existing concerns. Through this study, the government can also evaluate the implementation of PPKM during the Covid-19 pandemic as a learning material for the future.

All authors declare that they have no conflicts of interest.

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