Self-Screening as an Effort to Prevent the Risk of Exposure to COVID-19 in Pregnant Women

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Abstract

BACKGROUND: Pregnant women in the era of the COVID-19 pandemic were listed as one of the vulnerable groups at risk of being infected with COVID-19 because during pregnancy there were changes in gestational physiology and immunological changes in the body's system. Changes in the immune system that occur during pregnancy can make pregnant women more susceptible to coronavirus infection and more at risk of experiencing severe and fatal disease symptoms.

AIM: The purpose of this study was to analyze the effect of self-screening on behavior to prevent the risk of being exposed to COVID-19 in pregnant women.

METHODS: This type of research is experimental using a randomized controlled trial research design. This research was conducted for 2 weeks in August–September 2021. The population of this study was pregnant women in Surabaya. The sampling technique used consecutive sampling technique and was divided into two groups, namely, the intervention group with 39 respondents and the control group with 39 respondents. Data analysis used the Wilcoxon signed ranks test with a significance value of $p < 0.05$. The questionnaire used in this study was designed using a reference and behavioral theory approach with a reliability of 0.89 and a validity test that obtained a Cronbach alpha value of 0.86.

RESULTS: The average behavior to prevent the risk of being exposed to COVID-19 before conducting a self-screening intervention in the intervention group was 1.92 (the behavior to prevent the risk of being exposed to COVID-19 was sufficient) and in the control group was 1.85 (the behavior to prevent the risk of being exposed to COVID-19 was sufficient) with $p = 0.596$ which means there is no difference in the average behavior to prevent the risk of being exposed to COVID-19, while after being given the self-screening intervention the average prevention behavior in the intervention group is 2.46 (the behavior to prevent the risk of being exposed to COVID-19 is good) and in the control group is 2.05 (the behavior of preventing the risk of being exposed to COVID-19 is good) with $p = 0.000$ which means that there is a difference in the average behavior of preventing the risk of being exposed to COVID-19 in the intervention group and the control group after being given a self-screening intervention.

CONCLUSION: In general, this study proves that self-screening can foster behavior to prevent the risk of being exposed to COVID-19 in pregnant women.

Introduction

Pregnant women in the era of the COVID-19 pandemic were listed as one of the vulnerable groups at risk of being infected with COVID-19 because during pregnancy there were changes in gestational physiology and immunological changes in the body's system [1]. Experts are still studying the effect of COVID-19 or coronavirus infection on pregnant women [2]. However, changes in the immune system that occur during pregnancy can make pregnant women more susceptible to coronavirus infection and more at risk of experiencing severe and fatal disease symptoms [3].

Pregnant women also tend to have a high immune system to protect the developing fetus [4]. This condition can cause a cytokine storm and make pregnant women need intensive care [5]. Pregnant women infected with COVID-19 are at high risk of experiencing various health problems such as complications to death, one of the causes is lung capacity which decreases as the baby grows [6]. In addition, the heart of pregnant women pumps 1.5 times harder than usual to provide sufficient blood for the baby and the placenta [7]. An excess heart pump, which is referred to as a higher cardiac output, also puts pregnant women at risk for heart problems that can manifest as risk factors that can worsen COVID-19 [8], [9], [10].

In detail in several studies found, pregnant women are more likely to get intensive care in the intensive care unit (ICU) that is 10.5/1000 pregnant women [11]. Meanwhile, women who are not pregnant have a prevalence of 3.9/1000 pregnant women in the ICU. In addition, pregnant women are also 3 times more likely to be treated with respiratory support than non-pregnant women [12]. Pregnant women are also

more likely to die from COVID-19 with a prevalence of 1.5 deaths/1000 women. Meanwhile, women who are not pregnant have a mortality prevalence of 1.2/1000 women who are not pregnant [13].

Data from the Surabaya City Health Office, in 2021, show an increase in cases of pregnant women who are confirmed to be COVID-19 compared to cases in 2020 (Surabaya Health Office data in July 2020) at least 20 pregnant women who are positive for COVID-19 [1], [2].

The Centers for Disease Control and Prevention states, if infected with COVID-19, pregnant women will experience more severe conditions compared to non-pregnant women, because the number of confirmed cases of pregnant women with COVID-19 in a number of major cities in Indonesia has increased and the condition of pregnant women has increased. Already in severe condition, the present condition is worrying for all elements of society, including pregnant women. Moreover, that concern must be followed by anticipatory steps [14].

Efforts to reduce COVID-19 cases in pregnant women are an important intervention, in addition to several treatment and management programs that have been determined by the government, prevention efforts can be done independently by yourself by means of self-screening, with the aim of knowing how high the risk of pregnant women is exposed to COVID-19 [15].

Self-screening can be in the form of questions related to health protocol actions for pregnant women which include the following ways: (1) Must wear a mask, (2) diligently wash hands, (3) avoid crowds by keeping a distance, (4) reduce mobilization, (5) doing COVID-19 vaccination, (6) consumption of pregnancy vitamins, (7) eating a nutritious and balanced diet, (8) good stress management, (9) rest/sleep enough, and (10) light exercise. With this independent action, it is hoped that it can reduce cases and provide appropriate treatment early if pregnant women are confirmed positive for COVID [16].

Methods

This type of research uses experimental quantitative research using a randomized controlled trial research design. This research was conducted within 2 weeks in August–September 2021, sampling using consecutive sampling technique. The sample in this study was pregnant women in Surabaya who were included in the research criteria. The inclusion criteria in this study were pregnant women in Surabaya, not being sick, and willing to participate in the study for up to 2 weeks. The exclusion criteria in this study were respondents who were not willing to participate until the

end of this study. In this study, each respondent agreed by filling out a consent form. Participants in this study have the right to withdraw.

This study was divided into two groups, namely, the intervention group and the control group. The intervention group was given treatment in the form of self-screening for 2 weeks, while the control group did not receive any treatment. The intervention group with 39 respondents and the control group with 39 respondents. The procedure in this study is that the researcher obtains research permission first then the researcher visits pregnant women in Surabaya, precisely in the Southern part, pregnant women who agree to be involved in the study. Respondents signed an informed consent and participants had the right to withdraw. In this study, participants received two questionnaires in the form of demographic data (parity, occupation, husband's occupation, history of illness, and history of the COVID-19 vaccine) and a behavioral questionnaire to prevent the risk of being exposed to COVID-19 based on behavioral theory and had a reliability of 0.89 and a test the validity of the Cronbach alpha value obtained is 0.86. Data analysis used the Wilcoxon signed ranks test with a significance value of $p < 0.05$.

Results

Table 1 shows that the characteristics of the respondents in this study based on parity showed that almost half (23.1%) of the respondents were in the primiparous intervention group, while for the control group, the majority (25.6%) were primiparous respondents. Characteristics of respondents by occupation showed that almost all (34.3%) in the intervention group did not work while in the control group almost all (34.6%) worked. Characteristics of respondents according to the disease history showed almost entirely (28.2%) in the intervention group, there was no history of disease while in the control group

Table 1: Frequency distribution of respondents' characteristics in the intervention and control groups

Characteristics	Intervention Group (n = 39)		Control Group (n = 39)	
	f	%	f	%
Paritas Nullipara	6	7.7	2	2.6
Perimipara	16	23.1	20	25.6
Multipara	18	19.2	17	21.8
Job				
Work	20	19.6	27	34.6
Does not work	35	34.3	12	15.4
Disease history				
Disease	17	21.8	35	5.1
No Disease	22	28.2	4	44.9
COVID-19 vaccine history				
No vaccine	19	24.4	13	16.7
Vaccine	20	25.6	26	33.3
Husband's job				
WFO	33	42.3	11	14.1
WFH	6	7.7	28	35.9

WFO: Work from office, WFH: Work from home.

almost entirely (44.9%) had no history of disease. Characteristics of respondents according to the history of the COVID-19 vaccine showed almost entirely (33.3%) in the intervention group there was a history of the COVID-19 vaccine, while in the control group almost all (44.9%) had no history of the vaccine. Characteristics of respondents according to the husband's occupation showed almost entirely (42.3%) in the intervention group husbands worked work from office (WFO) while in the control group almost all (35.9%) husbands worked work from home (WFH).

Table 2 shows that the results of the normality test for behavioral variables to prevent the risk of being exposed to COVID-19 pre-test and post-test in the intervention group and control group with the Kolmogorov–Smirnov test obtained p > 0.05 which means that the data distribution is normally distributed so that the analysis the data can be continued using the Wilcoxon signed ranks test statistic test.

Table 2: Test for normality of behavior to prevent the risk of being exposed to COVID-19 in the intervention group and control group (n = 39; n = 39)

Group	Behavior to prevent exposure to COVID-19	P
Intervention	Pre-test behavior to prevent exposure to COVID-19	0.596
	Post-test behavior to prevent exposure to COVID-19	0.000
Control	Pre-test behavior to prevent exposure to COVID-19	0.015
	Post-test behavior to prevent exposure to COVID-19	0.005

Table 3 shows that the average behavior to prevent the risk of being exposed to COVID-19 in the intervention group was 1.92 (the behavior to prevent the risk of being exposed to COVID-19 was sufficient) and 1.85 in the control group (the behavior to prevent the risk of being exposed to COVID-19 was sufficient) with p = 0.596, which means that there is no difference in the average behavior to prevent the risk of being exposed to COVID-19 enough in the intervention group and the control group before the intervention.

Table 3: Behavior to prevent the risk of being exposed to COVID-19 in the intervention group and the control group before being given the intervention (n = 39; n = 39)

Group	Mean	SD	Min	Max	SE	p-value
Intervention	1.92	0.700	1	1	0.113	0.596
Control	1.85	0.812	1	1	0.130	

Table 4 shows that the average behavior to prevent the risk of being exposed to COVID-19 in the intervention group is 2.46 (the behavior to prevent the risk of being exposed to COVID-19 is good) and 2.05 in the control group (the behavior to prevent the risk of being exposed to COVID-19 is good) with p = 0.000 means that there is an average difference in behavior to prevent the risk of being exposed to COVID-19 in the intervention group and the control group after being given the intervention.

Table 4: Behavior to prevent the risk of being exposed to COVID-19 in the intervention group and the control group after being given the intervention (n = 39; n = 39)

Group	Mean	SD	Min	Max	SE	p-value
Intervention	2.46	0.643	1	1	0.103	0.000
Control	2.05	0.823	13	3	0.122	

Based on Table 5, the results of the Wilcoxon signed ranks test statistic obtained p = 0.000 in the intervention group and p = 0.005 in the control group, p < 0.05, it can be concluded that there is a significant change in behavior to prevent the risk of being exposed to COVID-19 before and after being given a self-screening intervention in the intervention group and the control group.

Table 5: The level of anxiety (pre- and post-test) in the intervention group and control group (n = 39; n = 39)

Group	Mean	SD	Count statistic	p-value
Intervention				
Pre	1.92	0.700	14.1	0.000
Post	2.46	0.643		
Control				
Pre	1.85	0.812	–2.7	0.005
Post	2.05	0.823		

Discussion

Pregnant women in the era of the COVID-19 pandemic were listed as one of the vulnerable groups at risk of being infected with COVID-19 because during pregnancy there were changes in gestational physiology and immunological changes in the body's system [1]. Experts are still studying the effect of COVID-19 or coronavirus infection on pregnant women [2]. However, changes in the immune system that occur during pregnancy can make pregnant women more susceptible to coronavirus infection and more at risk of experiencing severe and fatal disease symptoms [3].

Efforts to reduce COVID-19 cases in pregnant women are an important intervention, in addition to several treatment and management programs that have been determined by the government, prevention efforts can be done independently by yourself by means of self-screening, with the aim of knowing how high the risk of pregnant women is exposed to COVID-19 [15].

Self-screening can be in the form of questions related to health protocol actions for pregnant women which include the following ways: (1) Must wear a mask, (2) diligently wash hands, (3) avoid crowds by keeping a distance, (4) reduce mobilization, (5) doing COVID-19 vaccination, (6) consumption of pregnancy vitamins, (7) eating a nutritious and balanced diet, (8) good stress management, (9) rest/sleep enough, and (10) light exercise. With this independent action, it is hoped that it can reduce cases and provide appropriate treatment early if pregnant women are confirmed positive for COVID [16].

The results of the study before the intervention showed that the average behavior to prevent the risk of being exposed to COVID-19 in the intervention group was 1.92 (the behavior to prevent the risk of being exposed to COVID-19 was sufficient) and 1.85 in the control group (the behavior to prevent the risk of being

exposed to COVID-19 was sufficient). With p = 0.596, it means that there is no difference in the average behavior of preventing the risk of being exposed to COVID-19 enough in the intervention group and the control group before the intervention. After being given the intervention, it showed that the average behavior to prevent the risk of being exposed to COVID-19 in the intervention group was 2.46 (the behavior to prevent the risk of being exposed to COVID-19 was good) and 2.05 in the control group (the behavior to prevent the risk of being exposed to COVID-19 was good) with p = 0.000 which means that there is a difference in the average behavior of preventing the risk of being exposed to COVID-19 in the intervention group and the control group after being given the intervention.

The United campaign against COVID-19 is based on a risk approach to the pandemic situation. The communication approach used is different from health communication in general. For a pandemic situation like COVID-19, a risk communication approach is used which refers to increasing public knowledge including groups of pregnant women who are at high risk and on the potential risks and threats of health problems so that they are able to decide on steps and actions that can protect themselves from these problems [17]. The World Health Organization defines risk communication as the exchange of information and views on risks and risk-related factors among groups at high risk of contracting COVID-19 [18].

In a pandemic situation like this, many parties have made various communication efforts simultaneously and at the same time. On the one hand, this situation provides an advantage for the public to quickly get the latest information. Howeer, on the other hand, it has a weakness, namely, messages that are issued too much are random (impulsive) and always changing will create noise that interferes with receiving the message and ultimately prevents people from understanding it and changing their behavior [19]. Therefore, it is important for communicators to pay attention and prioritize key behavior change goals that are considered essential to effectively and efficiently reduce COVID-19 cases [20].

Self-screening is one way to convince pregnant women that the COVID-19 condition can be controlled if they are willing to take action and respond in accordance with the suggestions/messages conveyed and the message is effective in reducing transmission, easy to understand, and can be done [21]. Therefore, it is hoped that the ability of pregnant women to assess themselves including the risk or not being exposed to COVID-19 as a way to reduce the high mortality rate in pregnant women during the COVID-19 pandemic [22]. Behavior to prevent exposure to COVID-19 in pregnant women will appear if they feel a threatening condition and consider themselves a risk group [23]. Behavior to prevent exposure to COVID-19 in pregnant women is influenced by several factors, namely, self and environmental factors including husbands, work, and the COVID-19 vaccine [24]. In this study, the results obtained in the intervention group. Most of them did not work, in the control group most worked. In the intervention and control groups, most had no history of disease/comorbidities. In the intervention group, most of them had done the COVID-19 vaccine and in the control group, most of them did not get the COVID-19 vaccine. The most of the parity group aged 15–25 years were still classified as teenagers. In addition, in this study, it was found that most of them were women and did not work. In the intervention group, the most of the husbands worked WFO and in the control group most were WFH. Some of the factors above are a threat to the ease with which pregnant women are exposed to COVID-19, therefore, education and supervision must be provided, especially for husbands and other members and the most important thing is the administration of the COVID-19 vaccine [25], [26], [27].

Conclusion

This study proves that self-screening can foster behavior to prevent the risk of being exposed to COVID-19 in pregnant women. The role of the maternity nurse in this problem is to provide education about the importance of health protocol behavior to prevent exposure to COVID-19 in pregnant women. Suggestions for the next research are to increase the number of respondents, variables, and expand the research location.

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