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During the COVID-19 pandemic, the impact of religious caring behavior increases the immunity of medical-surgical nurses

Durante la pandemia de COVID-19, el impacto de la conducta de cuidado religioso aumenta la inmunidad de las enfermeras médico-quirúrgicas

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SUMMARY

Introduction: *Caring is a fundamental service basis in nursing because it is the main behavior of nurses in carrying out nursing care. Islamic caring could stabilize the psychological condition of nurses and patients. Psychologically stable nurses and patients could increase immunity in giving care nursing during the COVID-19 pandemic. This study aimed to analyze the impact of Islamic caring behavior on nurses, particularly in terms of enhancing their psychospiritual comfort, preparedness, and immunity. This research's findings open avenues for further exploration into the potential of Islamic caring to improve nurses' psychospiritual comfort and immunity.* **Methods:** *This is pre-experimental research with a pre-post-test design. The population is all medical-surgical nurses at Muhammadiyah Gresik Hospital. A sample of 16 nurses was recruited using a purposive sampling technique. Religious Islamic caring, comfortable psychospiritual, preparedness, and immunity were variables. The instrument was an inspection of complete blood count and modified questionnaire from previous study. Data analysis was carried out with the Wilcoxon test at a significance level of $p \leq 0.05$.* **Results:** *All respondents had complete COVID-19 vaccination status and 81.3 % were female. In nurses, religious caring increased comfortable psychospiritual, preparedness, and erythrocytes ($p = 0.043$, $p = 0.043$ and $p = 0.015$). Hemoglobin, hematocrit, platelets, and leukocytes were not significantly influenced by religious caring ($p = 0.145$, $p = 0.641$, $p = 0.287$, and $p = 0.103$).* **Conclusion:** *Religious caring is influential in the comfortable psychospiritual and preparedness of medical-surgical nurses. Religious Islamic caring enhances immunity, as seen by enhancing erythrocytes.*

Keywords: *COVID-19, immunity, islamic caring behavior, nurse medical-surgical.*

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RESUMEN

Introducción: *El cuidado es una base fundamental del servicio en enfermería porque es el comportamiento principal de las enfermeras al llevar a cabo la atención de enfermería. El cuidado islámico podría estabilizar la condición psicológica de las enfermeras*

y los pacientes. Las enfermeras y los pacientes psicológicamente estables podrían aumentar la inmunidad al brindar cuidados de enfermería durante la pandemia de COVID-19. Este estudio tuvo como objetivo analizar el impacto del comportamiento de cuidado islámico en las enfermeras, particularmente en términos de mejorar su comodidad psicoespiritual, preparación e inmunidad. **Métodos:** *Se trata de una investigación preexperimental con un diseño de prueba pre-post. La población son todas las enfermeras médico-quirúrgica del Hospital Muhammadiyah Gresik. Se reclutó una muestra de 16 enfermeras utilizando la técnica de muestreo intencional. Las variables fueron el cuidado islámico religioso, la comodidad psicoespiritual, la preparación y la inmunidad. El instrumento fue un análisis de sangre completo y un cuestionario modificado del estudio anterior. El análisis de datos se llevó a cabo con la prue-ba de Wilcoxon a un nivel significativo de* $p \leq 0.05$. **Resultados:** *Todos los encuestados tenían un estado de vacunación completo contra la COVID-19 y el 81,3 % eran mujeres. El cuidado religioso aumentó la comodidad psicoespiritual, la preparación y los eritrocitos de las enfermeras (*$p = 0,043$, $p = 0,043$ *y* $p = 0,015$*). La hemoglobina, el hematocrito, las plaquetas y los leucocitos no se vieron significativamente influenciados por el cuidado religioso (*$p = 0,145$, $p = 0,641$, $p = 0,287$ *y* $p = 0,103$*).* **Conclusión:** *El cuidado religioso influye en la comodidad psicoespiritual y la preparación de las enfermeras médico-quirúrgicas. El cuidado religioso islámico mejora la inmunidad, como se ve al mejorar los eritrocitos.*

Palabras clave: *Comportamiento de cuidado islámico, enfermera médico-quirúrgica, inmunidad.*

INTRODUCTION

Human immunity is a complex system of cell, tissue, and organ performance that aims to protect the body from "enemy" disturbances to be destroyed (1). Keeping the immune system working optimally can be done with a healthy lifestyle, such as getting enough sleep, exercising regularly, eating healthy foods, managing stress, and not smoking (2). Individual stress management is strongly influenced by external conditions, one of which is the COVID-19 pandemic. The pandemic significantly increases the facility health load (3). An enhancement burden was seen with existing nurses who experienced work fatigue and boredom caring for patients. This follows research showing that the COVID-19 pandemic affects intelligence, emotional well-being, spirituality, and intellectual ability (4).

As the tip of the spear in providing nursing services, nurses' immunity must be guarded against the many effects of the COVID-19 pandemic. Nurses' immunity in this study was seen from psychological and physiological perspectives. The nurse's psychology was assessed from psychospiritual comfort and preparedness, while the physiological was estimated from a blood test. Previous research has shown that nurses experience psychological problems facing the COVID-19 pandemic, indicated by digestive disorders (59 %), fatigue (55 %), difficulty sleeping (45 %), nervousness (28 %), frequent crying (26 %), and experiencing burnout (5,6). Anxiety and stress indicate nurses who do not feel comfortable psychospiritually. This condition is also supported by data showing that nurses still have preparedness problems (7,8). The research data have not been found in several areas of East Java, especially in the Gresik area. However, a preliminary study at the Gresik Muhammadiyah Hospital showed that nurses experienced digestive disorders and fatigue at work during the COVID-19 pandemic. This situation can lead to more severe problems if not identified and treated promptly. Evidence indicates that unaddressed emotional, spiritual, and intellectual issues reduce health (4). In addition, public health officials were unprepared for the outbreak which had an impact on reducing the ability to prevent, control, and manage COVID-19 patients (9).

This condition indicates the need for an intervention to deal with and resolve the problem. Religious care nursing is one possible solution because it emphasizes caring behavior, which refers to religious values. The optimal practice of religious caring will lower anxiety and increase the immunity of nurses (10). Based on the above concept, the exemption is comfortable psychospiritual, preparedness, and complete blood count examination. Spiritual comfort is the achievement of prosperity where the individual becomes more grateful for all the blessings and accepts all challenges patiently and sincerely (11). Nurses' preparedness to deal with COVID-19 requires knowledge and attitude as

internal factors (12). Complete blood count as an indicator of immunity that was achived by a complete blood analysis assessing red blood cells (RBC), hemoglobin (HGB), hematocrit (HCT), platelets (PLT), and white blood cells (WBC) (13-16). This study aimed to assess howthat was achived by a complete blood analysis assessin how religious caring influences the immunity of medical-surgery nurses during the COVID-19 pandemic.

METHODS

The research design was experimental, with a pre-post test group design to analyze preparedness, comfort, and complete blood count. The research statement was that religious caring influences nurses' preparedness and comfort, psychospiritual, and immunity during the COVID-19 pandemic. This study included all nurses at private Muhammadiyah Hospital Gresik, East Java, Indonesia. A sample of 16 nurses was recruited using a purposive sampling technique. The technique was determined by the criteria for an active and functional nurse who works according to shift and is not currently on paid leave or holiday.

Religious caring uses modules published in previous study (17). Respondents were given a religious, caring intervention three times over three weeks. The first was given by conducting online workshops. After the seminar, respondents were directed to apply religious care. The second meeting was conducted online two days after the first meeting to evaluate the problematic application of religious caring. The third meeting was conducted a day after the second and was an accompaniment application of religious caring and evaluation for five days. Respondents were allowed to apply religious caring after accompaniment seven days later.

Dependent study variables were COVID-19 preparedness, comfort, psychospiritual, and nurse immunity. The questionnaire on COVID-19 preparedness was modified from a previous study (6). The questionnaire on psychospiritual comfort was published in an earlier study (18). The validity and reliability results are promising (r=0.25 and Cronbach's alpha= 0.712). The nurse immunity system used a laboratory sample of complete blood count (erythrocytes, hemoglobin, hematocrit, platelets, and leucocytes).

Data was collected for four months, from March 18, 2021, to August 25, 2021, at Muhammadiyah Hospital Gresik. After the respondents had signed the informed consent form, pre-data collection intervention related to preparedness and comfort psychospiritual was completed with an online instrument questionnaire. The respondent was asked to fill out the *Google Forms* link for the questionnaire. After filling, the respondent had venous blood taken for a complete blood count test (erythrocytes, hemoglobin, hematocrit, platelets, and leucocytes) as pre-intervention data. Respondents were given religious, caring behavior intervention, a complete intervention three times over three weeks. Post-intervention data collection was conducted after respondents had applied religious care for seven days, and after eight days, the respondents filled in *a Google Forms* link related to the questionnaire; taking venous blood was recommended. The data were analyzed by looking at the frequency and percentage. Primary data analysis used a Wilcoxon statistical test with a significance degree of 0.05.

The research procedure was tested and declared ethical by the Commission Ethics Faculty of Health Research Airlangga University Nursing on November 16, 2020, with the number certificate ethics no. 2129-KEPK. The ethical principles applied to this study include, among others, that participants were given information and filled out informed consent before data collection. They have the right to data confidentiality by using names and initials.

RESULTS

Table 1 shows the characteristics of 16 samples. Respondents were mostly female (81.3 %), most early mature (43.8 %). Their education was mostly a Bachelor of Nursing (75 %), and their employee status was almost permanent (87.5 %). All medical-surgical nurses received the COVID-19 vaccine once or twice

Table 1. Characteristics of Medical-Surgical Nurses n=16

Characteristic	n	%
Sex		
Female	13	81.3
Male	3	18.7
Age		
17-25 years old	1	6.2
26-35 years old	7	43.8
36-45 years old	4	25.0
46-55 years old	4	25.0
Education		
Diploma in Nursing	4	25.0
Bachelor in Nursing	12	75.0
Status of Employment		
Permanent	14	87.5
Not Permanent	2	12.5
COVID-19 Vaccination Status		
Complete	16	100.0

(100 %).

Results for spiritual comfort, COVID-19 preparedness, and laboratory blood are shown in Table 2. The psychospiritual comfort of nurses before and after the intervention shows an increased score. Wilcoxon test results show a significant difference between comfortable psychospiritual medical-surgical nurses before and after being given religious care ($p=0.043 < 0.05$). Preparedness of medical-surgical nurses before and after intervention showed an increased score. Wilcoxon test results show a significant difference between the preparedness of medical-surgical nurses before and after being given religious care ($p=0.043 < 0.05$).

In a complete blood count test, nurses showed results mainly within normal limits, following the reference limit values from the laboratory examination site. Red blood cell (RBC) analysis shows that the average score before and after the intervention is within normal limits. However, some nurses showed RBC results before and after the intervention below the reference limit value. RBC results between before and after intervention are indicated by increased score average. The Wilcoxon test results show a significant difference between the RBC of medical-surgery nurses and others before and after receiving religious caring ($p=0.015 < 0.05$).

The hemoglobin (HGB) level averages were

Table 2. Examination Results of Medical-Surgical Nurses n= 16

Measurement	Pre-test	Post-test	Reference Value	*p-Value
Comfortable				
M ± SD	51.50 ± 4.73	53.13±4.03	-	0.043
Min-Max	36 - 56	42 - 56		
Preparedness				
M ± SD	66.44 ± 6.59	72.00 ±6.51	-	0.043
Min-Max	52.00 - 77.00	64 - 80		
RBC				
M ± SD	4.72 ± 0.39	4.52 ± 0.22	4.10 - 5.10	0.015
Min- Max	3.60 - 5.33	3.99 - 5.18		
Hemoglobin				
M ± SD	13.48 ± 1.51	3.28 ± 0.73	12.3 - 15.3	0.145
Min- Max	10.00 - 15.90	11.50 - 15.40		
Hematocrit				
M ± SD	39.40 ± 3.54	39.28 ± 1.95	36.0 - 45.0	0.641
Min- Max	30.50 - 45.70	34.00 - 44.50		
Platelet				
M ± SD	293.19 ± 48.76	290.50 ± 22.25	150 - 450	0.287
Min- Max	196 - 369	227 - 338		
WBC				
M ± SD	7.61 ± 2.99	6.81 ± 0.72	4.0 - 10.0	0.103
Min- Max	3.66 - 17.22	4.94 - 8.71		

within the range score reference (standard) before and after the intervention. However, HGB before and after the intervention was still found to be below standard value. Wilcoxon test results show no HGB difference for medical-surgical nurses before and after being given religious caring (p=0.145> 0.05). The hematocrit level (HCT) shows the average score before and after the intervention within the range score reference (standard). However, HCT before and after intervention still found scores under standard value. The Wilcoxon test results show no statistical difference between HCT medical-surgical nurses who were subsequently given religious caring (p=0.641 > 0.05).

Platelet concentration (PLT) or platelets show the average score before and after the intervention within the range score reference (standard). Wilcoxon test results show no difference between PLT medical-surgical nurses before and after being given religious caring (p=0.287 > 0.05). White blood cells (WBC), the number of leucocytes, show that the average score before and after the intervention is within the range score reference (standard). WBC between before and after the intervention showed that it was not below the standard value. Wilcoxon test results show no statistical difference between WBC medical-surgical nurses before and after being given religious care (p=0.103 > 0.05)

DISCUSSION

The results showed a change in the immunity of medical nurses before and after the religious caring intervention. Nurses' exemptions that showed significant changes included psychospiritual comfort, preparedness, and red blood cells/erythrocytes. This can be explained as follows: the results show nurses' psychospiritual comfortableness before and after giving intervention and after showing increased scores. Statistical results show a significant difference between medical-surgical nurses' satisfaction with psychospiritual levels before being given religious care. These results align with a previous study that found that nurses who did religious caring could increase patients' psychospiritual comfortableness (18). In the previous study, patients were the subject, while in this study, nurses (Health Officers) were the subject, but the results were the same. Though there is a different subject, the same result shows that religious caring could provide comfort for themselves and patients as recipients of nursing caring (19). This indicates that religious caring is significantly related to psychospiritual comfort. Religious caring consists of maintaining faith, compassion, and competence. By considering the characteristics of nurses and nurses' spiritual behavior, religious caring can increase psychospiritual comfort.

Preparedness of medical-surgical nurses before and after intervention showed increased scores. The improvement in preparedness was statistically significant before and after being given religious caring. This aligns with a study that previously stated that the existing connection means knowledge with preparedness for handling bird flu outbreaks in the emergency department (7). Results show repair is possible because of the ability of nurses. These results supported a previous study where someone's level of knowledge is influenced by age, education, and experience (20). The higher the medical-surgical nurses' education, the better the Strata 1 (Bachelor) level. The higher the level of education a person has, the more breadth of insight and openness they possess.

Knowledge is a supporting factor for medical-surgical nurses in nurse readiness to treat COVID-19 patients. Knowledge about governance care for COVID-19 patients needs continuously to be upgraded along with the development and characteristics of the disease caused by the coronavirus, which constantly mutates. The medical-surgical nurses must enhance their knowledge of governance care regarding COVID-19. This is seen in the theory that says that behavior is influenced by experience, environment, and encouragement for avoiding disease threats or the occurrence of a possible risk to health (20). Behavioral standby in applying five actions, including washing hands and managing personal protective equipment, is an effort to avoid the risk of disease infection. Another effort to upgrade is actively looking for information on developing governance care for COVID-19 patients.

Red blood cells (RBC) show scores below the reference before and after an intervention.

However, there was a statistical increase in the average score of erythrocytes after being given religious caring, indicating that medical-surgical nurses receiving religious caring training can increase red blood cells. The number of red blood cells is influenced by age, individual activity, nutrition, altitude, pace, and temperature (2). Following the theory, it is seen that the activity of nurses in giving religious care nursing, as well as behavior preparedness, could influence the production of erythrocytes. Increased erythrocytes could be interpreted as nurses have enhanced immunity. Erythrocytes play a direct and significant role in immunity (13,14).

The primary function of erythrocytes is oxygen carriers; however, they also play an important role in the immune system. Erythrocytes recognize and adhere to antigens and promote phagocytosis. The abnormal morphology and function of erythrocytes are also involved in the pathological processes of some diseases. A previous study stated that a change in the metabolism of red blood cells could contribute to a change in function immunity and natural dualistic modulation of immune erythrocytes. Erythrocytes directly participate in the immune complex reaction (bacteria, complement, and antibody), and this specific binding suggested a central role for this cell type. In addition, by suppressing neutrophil signaling, erythrocytes help prevent excessive inflammation and tissue damage. Studies have shown that blood lacking erythrocyte surface receptors (Duffy receptors) exhibit high levels of plasma chemokines after lipopolysaccharide exposure (13).

Blood hemoglobin (HGB) shows that the average score before and after intervention increased the score reference (standard). However, there was no HGB statistical differences between a nurse's HGB before and after being given religious caring, indicating that a nurse has no disturbance in health and a decrease in their immunity.

Evidence shows that functions other than HGB can interact with system immunity well by direct means or by binding to the associated pattern molecular pathogen. The role of HGB in system immunity is primarily related to the interaction between HGB, pathogen, component cell host, and cell immunity must be further explored (16).

However, HGB before and after intervention still scored below standard but increased before and after. Possibly, this is because the number of red blood cells is related to HGB levels. A reduction in hemoglobin levels accompanies a decrease in the number of erythrocytes, so a decrease in hemoglobin levels indicates a decline in the number of erythrocytes (21). A low RBC result means low HGB levels, and these results are shown in the same respondents.

The average score of the hematocrit level (HCT) before and after the intervention increased score reference (standard). HCT before and after intervention still found scores under standard value, but there was an increase between before and after the religious caring intervention. Indeed, there was a statistical difference in HCT before and after giving religious caring. A higher value of hematocrit in the body may indicate individual dehydration. Platelet levels (PLT) show that the average score before and after intervention increased the score reference (standard). However, platelets were not statistically different before and after the intervention.

This result may indicate that medical-surgical nurses' immunity is generally in good condition with no drop in immunity. Platelets play an important role in the vessel. Following their formation from megakaryocytes, platelets exist in circulation for 5-7 days and primarily function as regulators of hemostasis and thrombosis. Following vascular insult or injury, platelets become activated in the blood, resulting in adhesion to the exposed extracellular matrix underlying the endothelium, platelet plug formation, and finally, formation and consolidation of a thrombus consisting of both a core and shell. In addition to the regulation of hemostasis in the vessel, platelets have also been shown to play an important role in innate immunity as well as the regulation of tumor growth and extravasations in the vessel (2). Platelets are cell effectors of inflammation that can influence innate and adaptive immune responses. The capacity of platelets to participate in innate immunity is largely due to their ability to release a myriad of inflammatory and bioactive molecules stored within granules or synthesized upon activation.

These mediators attract and modulate the effector cells of the innate immune system (22). The cell communication process includes the release of trapped extracellular induced neutrophil platelets, platelet Ag presentation to T cells, and modulation platelets from secretion cytokines monocytes discussed in the context of infectious disease and sterile attention primary in human health (15).

White blood cells (WBC)/leucocytes show that the average score before and after intervention increased the score reference (standard). WBC before and after the given intervention showed below-standard values after an intervention. There was no statistical difference in the immunity of medical-surgical nurses before and after being given religious caring. White blood cells, or leukocytes, are part of the immune system and participate in innate and humoral immune responses. They circulate in the blood and mount inflammatory and cellular responses to injury or pathogens; they detect and eradicate foreign microorganisms, such as viruses, bacteria, and parasites that carry disease (2). Leucocytes could become a description influence on immunity in giving religious caring to medical-surgical nurses. Leucocytes were found below normal before providing religious care; however, they were within normal limits after religious caring. This is similar to the results observed concerning erythrocytes, hemoglobin, and hematocrit after giving religious caring. One of the study's limitations is the sample size due to the COVID-19 pandemic and some hospitals not permitting research data collection. Many prospective respondents were unwilling to go to hospitals that provided research permits because the workload was already high during the pandemic. In addition, this research is limited to religious-based hospitals, requiring further study and modification of the module to be implemented in other religion-based hospitals.

CONCLUSION

Research showed that religious caring behavior increases nurses' comfort in psychospiritual, preparedness, and erythrocytes. Hemoglobin, hematocrit, platelets, and leukocytes were not significantly influenced by religious caring. Religious caring behavior affects nurses' comfortable psychospiritual preparedness and enhances immunity by enhancing erythrocytes. Religious caring behavior can be applied throughout the hospital's care, so nurses must use it consistently. Evaluation of immunity through specific Interleukin-2 (IL2) in nurses who apply religious caring behavior would be recommended to be conducted in future research.

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