Enfermería Clínica

The preparedness of disaster among nurses in community health centers in rural areas during the COVID-19 pandemic in Malang City[☆]

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Abstract Positive COVID-19 cases in Malang City, Indonesia continue to increase. Until 04 August 2021, the COVID-19 update shows 3301 positive cases with 7754 cured and 832 deaths. This study aims to identify nurses preparedness in rural area community health centers during the COVID-19 pandemic in Malang for self-control to implement health protocol. This study intends to provide insights on controlling COVID-19 spread in Malang, Indonesia.

This research is a quantitative study with correlative analytic observational design and a cross-sectional approach involving 120 nurses from 16 primary health centers. The results of the bivariate analysis using gamma correlation test are: knowledge factors ($p = 0.005$; $r = 0.35$), attitude ($p = 0.000$; $r = 0.46$), means of infrastructure ($p = 0.000$; $r = 0.54$), and self-control ($p = 0.000$; $r = 0.52$) for the quarantined COVID-19 patients. Knowledge, attitude, infrastructure, and safe house factors can influence self-control for COVID-19. In rural areas, health education—as education and empowerment for patient self-control—is an effort to encourage them to obey health protocol during the pandemic.

Nurse readiness and preparedness during the pandemic is crucial for strengthening the assertive behavior commitment through self-control. This ensures the community's awareness of the importance of complying with health protocols for the common good. Mental nursing intervention needs to be added as a part of psychosocial therapy for the community's social problems, primarily in reducing the pressure due to the social distancing enforcement to control and prevent COVID-19 spread.

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Introduction

Natural disasters worldwide are expected to take place nearly every day, where the greatest events in the Asia-Pacific region reached 40% of the total disasters in the world with 80% of victims coming from the area.[1] Indonesia is one of the countries in Asia that is geographically located in disaster-prone areas. The number of positive cases of COVID-19 in Malang continues to increase. A total update on COVID-19 in Malang shows that there have been 3301 positive cases with 7754 cured and 832 died from COVID-19, recorded until 04 August 2021.

Based on these data, following the international standards of the Council of Nursing (ICN), nurses were required to serve as disaster nursing in emergency response.[2] This role puts nurses—as health care providers—in the front line, a direct care provider playing an active role in the handling of victims in disaster response whose aim is to alleviate the impact of casualties that may occur[3]. This remains a challenge for nurses because the management of disaster victims during emergency response is still not optimal in some developing countries, including Indonesia.[4]

One underlying reason is the improvements needed in nursing education institutions for providing the necessary knowledge and skills during the management of disaster victims. Therefore, most nursing graduates do not have the adequate knowledge and skills to volunteer at the time of disasters.[5]

Abdelalim and Ibrahim[6] stated that, at this time, the right step in improving the knowledge and skills of nurses is to provide early education on disaster to nursing students. The provision of early education for nursing students is expected to increase the knowledge in terms of the management of real victims during emergency response.

Method

This study is a descriptive exploratory with a cross sectional design. The research was conducted at Malang City, East Java provincial for all nurses who worked at primary health care 16 community health care. The quota sampling technique used for 60 nurses in ED and 60 nurses in non-ED respectively. Selection of the sample was based on the following inclusion criteria: (1) a nurse who has a minimum working period of ≥ 1 year; (2) has a smartphone; (3) has a minimum education diploma in nursing; and (4) is not on leave or study assignments. The reasons for those inclusion criteria were nurses who have worked for at least 1 year in both units have the competencies and understanding of disaster preparedness information that obtained from experience and disaster training program. Due to in COVID-19 pandemic, the questionnaire used the Google Form application, which required respondents to have a smartphone.

The data collection tool was a Disaster Preparedness Questionnaire (DPQ); a questionnaire in a Likert scale, consisting of 30 items. The questionnaire has the validity and reliability test with the highest correlation values 0.725 and 0.821 respectively. The study used a questionnaire consisting of two parts, namely: demographic data and the DPQ questionnaire. Because of COVID-19 pandemic during this study, the data collection method was carried out by providing an online-based questionnaire using Google form. This research was approved by the Ethics Committee of Faculty of Nursing, Airlangga University with number 2095-KEPK/2020. Respondents were provided research information via Google form, and provided written informed consent voluntarily to be involved in this study.

Results

Characteristics of respondents

The respondents in this study were nurses of a community health center, as presented in the following frequency distribution characteristics of respondents (Table 1).

Nurses' knowledge before and after intervention simulation standards

In Table 2, the variable data displays the respondents' knowledge before and after the intervention in the control group. Table 2 infers that there is an increase in knowledge after being given intervention standard simulation as opposed to before the intervention. The average score early on at the pretest is 26.39, which increased to 70.28 after intervention in the post-test.

Bivariate analysis

The effects of knowledge on the improvement of preparedness

The analysis that uses gamma correlation test obtained the results of knowledge factors ($p = 0.005$; $r = 0.35$), attitude ($p = 0.000$; $r = 0.46$), means of infrastructure ($p = 0.000$; $r = 0.54$), and self-control ($p = 0.000$; $r = 0.52$) for quarantined Coronavirus Disease (COVID-19) patients. Knowledge, attitude, infrastructure, and safe house factors can influence self-control for Coronavirus Disease (COVID-19). In rural areas, health education—as an education and empowerment for patient self-control for COVID-19—is one of the efforts to encourage patients to obey health protocol during the pandemic in Malang (Table 3).

The effect of simulation standards on preparedness

Based on the analysis using the paired t-test in Table 4, it can be seen that the differences between the mean scores of knowledge before and after the intervention shows significance with $p = 0.000$ ($p < 0.05$). Therefore, we can conclude that there are differences between the mean score of knowledge before and after the intervention standard simulation in the treatment group. This may imply that the standard simulation methods can significantly increase students' knowledge in providing treatment for victims in a disaster simulation.

Table 1 Frequency distribution of respondents characteristics.

Characteristics	Control		Intervention		%
Age	f	%	F	%	
20–25 years	21	6	2	11	8
26–30 years	25	28	3	17	22
31–35 years	28	44	10	56	50
36–45 years	46	22	3	16	20
Sex					
Male	38	33	4	22	28
Female	82	67	14	78	72

Table 2 Knowledge description; before and after.

Knowledge	Mean	SD	95% CI
Pre-test	26.39	9.04	21.89–30.89
Post-test	70.28	10.07	65.27–75.28

Table 3 The effects of knowledge on the improvement of readiness and preparedness.

Knowledge	N	Mean ± SD	Mean difference (95% CI)	p
Pre-test	60	23.89 ± 9.00	57.78 (53.85–61.71)	0.000
Post-test	60	81.67 ± 8.04		

Table 4 The difference in knowledge score before and after the intervention.

Knowledge	n	Mean ± SD	Mean difference (95% CI)	p
Pre-test	60	26.39 ± 9.04	43.89 (38.59–49.18)	0.000
Post-test	60	70.28 ± 10.07		

Discussion

The preparedness of community health center employ knowledge in victim management in disaster emergency response simulation for patients with COVID-19. Based on the research results presented in Table 4, it is evident that the value of the knowledge variable before and after the re-intervention increased in the treatment group. The mean difference in the knowledge scores before and after the intervention with paired t-test in the treatment group had a value of $p = 0.000$. This p-value indicates that there are significant differences in the scores before and after the intervention. In other words, it can be concluded that the administration of TDE interventions significantly influences the increase in COVID-19 knowledge.

The findings in Table 4 above are in accordance with that of Chung[7] in his study, involving 175 respondents who were given intervention in the form of role-playing games in the treatment group and electronic games in the control group. 85% of the participants with role-playing tablet games had a more significant increase in knowledge than the respondents with the electronic-game intervention, which was 77%. Knowledge retention was also better in the respondent group with tabletop role-playing games intervention.

This increase was due to the fact that games with tabletop role-playing games actively involve individuals to participate in joint simulations, so that they get feedback from fellow actors in the simulation. This feedback will later provide an overview that is easier for the participants to understand. Meanwhile, electronic games only involve individuals in terms of independent learning without playing roles together in a two-way direction.

Other studies are also similar to the above results according to Dyson et al.,[8] who used a quasi-experimental design with 40 respondents divided into control and treatment groups. After being subjected to the role-play intervention using tabletop, the creativity of each respondent significantly increased in the treatment group. Creativity can increase significantly because the cognitive abilities of the respondents also increased. This is because of the tabletop exercise media, the respondents were able to imagine actual events that occurred according to the description of the scenario that had been made before, so participants easily understood and accepted the material easily.

A recent study by Pate et al.[9] involved 113 pharmaceutical students as respondents who were given a tabletop emergency preparedness exercise intervention for 3 h every week for 1 month. The result suggests an increase in respondents' knowledge of disaster preparedness and the role of pharmacy in the emergency response phase by 73–75%. In addition, the respondents also experienced an increase in the level of awareness and willingness to participate in disaster emergency response by 85%.

Conclusions

1. The preparedness of the nurses in community health center in rural area during the COVID-19 pandemic in Malang are very important for strengthening the commitment of assertive behavior through self-control and they need to be given so that the community is aware of the importance of complying with health protocols for the common good.
2. This needs to be added to mental nursing interventions as a part of psychosocial therapy for social problems in the community, primarily for reducing the pressure due to the enforcement of social distancing to control and prevent the spread of COVID-19.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgements

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