

The Validity and Reliability of the Nurse Preparedness Questionnaire in Facing Emerging Infectious Diseases: Tool Analysis

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ABSTRACT

Nurse preparedness is a factor that needs to be considered in order to suppress work safety in the face of the COVID-19 pandemic. Early nursing intervention plays an important role in the prevention, preparedness, and response to the impact of the COVID-19 pandemic and other emerging infectious diseases. A nurse preparedness questionnaire about emerging infectious diseases needs to be compiled as an instrument that can measure preparedness related to unpredictable emerging infectious diseases. The aim of this study was to analyze the validity and reliability of the nurse preparedness questionnaire in dealing with emerging infectious diseases in Bali. This research method is a cross-sectional study involving all nurses in the emergency department at Klungkung Hospital as many as 30 people. Conducting a literature review and adopting the WHO COVID-19 preparedness questionnaire developed the instrument. The questionnaire consists of 4 dimensions with a total of 28 statement items covering the dimensions of knowledge on preparedness for emerging infectious diseases, dimensions of facility preparedness and response readiness in triage, dimensions of the effective response of nurses, and dimensions of preparedness and readiness of nurses for personal protective equipment. The stratified scale in this questionnaire uses a modified Likert scale with 4 answer choices of answers choices (4) strongly agree (3) agree (2) disagree and (1) strongly disagree. In instrumental testing, all 28 items of the instrument were confirmed through content validity Using internal consistency reliability, the study found reasonable inter-item reliability for all items (Cronbach's $\alpha > 0.90$). These findings show that all statement items have been declared valid and reliable. This study is meaningful in the sense of simplifying the tool by removing items that are not in accordance with the Indonesian context and developing statement items that are in accordance with statistical preparedness in dealing with emerging infectious diseases

Keywords: nurse preparedness questionnaire; emerging infectious diseases (EID); emergency nurse

INTRODUCTION

Emerging infectious diseases (EID) have been responsible for the vast majority of infectious disease outbreaks for centuries. EID is an infectious disease that has never occurred in humans before, has occurred before in humans but only affects a small population in remote areas, or has occurred in the past but has only recently been recognized as a distinct disease caused by an infectious agent causing adverse effects. such as global mortality and morbidity, economic burden, and social and geopolitical implications. For example, related to the COVID-19 pandemic, as of December 2021 there were more than 275 million cases worldwide and more than 5 million deaths recorded (Spernovasilis, Tsiodras, & Poulakou, 2022)

The public health, social and economic impacts of the worldwide pandemic are devastating (Spernovasilis et al., 2022). Health care providers on the front line in the fight against EID are at the greatest risk of infection and so far, many have been infected and some have died from the disease. Emerging infectious agents such as SARS-CoV-2, MERS-CoV, Ebola virus and multi-drug resistant organisms (MDR) exhibit high virulence in humans (Tonui, Chepkutto, & Rotich, 2021). The COVID-19 pandemic is having the biggest impact on frontline healthcare workers that has been witnessed in recent years (Spernovasilis et al., 2022). Thus, it is imperative that healthcare providers have adequate knowledge and preparedness of infectious diseases for better recognition and response.

Nurses' preparedness in dealing with patients with EID is an integral part of hospital disaster management (Azalita, Marlina, & Halimuddin, 2021). WHO emphasizes the use of hospital readiness checklists for EID to improve prevention and management among health care professionals. Therefore the preparedness component is very important for frontline nurses (Mubarak Al Baalharith & Mary Pappiya, 2021).

It is important that all nurses including emergency nurse as front liner be prepared to care for people affected by such EID. To measure nurse preparedness, a valid and reliable questionnaire is needed. The purpose of this study was to analyze the validity and reliability of the nurse preparedness questionnaire in dealing with emerging infectious diseases.

METHOD

This research method is a cross-sectional study. Survey data were collected from Emergency Departments (ED) nurses working at Klungkung Hospital. This study involved 30 ED Nurses with accidental sampling technique. This research was conducting by explanations of the survey, informed consent, and survey forms to nurses who volunteered to participate in the survey. This research has received ethical approval from the Health Ethics Commission of Stikes Bina Usada Bali with Ethical Clearance Number 051/EA/KEPK-BUB-2022.

The tool is conducting from a literature review about WHO COVID-19 preparedness questionnaire. The original version WHO COVID-19 preparedness questionnaire consists of 34 items (Mubarak Al Baalharith & Mary Pappiya, 2021). This study followed the instrument development guidelines presented by Tafforeau (2005), including 4 step of translation; 1) forward translation of questionnaire from English to Bahasa; 2) Independent review; 3) Committee adjudication; 4) Back translation (controversial according to current literature). As a result, the questionnaire of nurse preparedness in facing EID consists of 4 dimensions with a total of 28 statement items covering the dimensions of knowledge on preparedness for emerging infectious diseases, dimensions of facility preparedness and response readiness in triage, dimensions of the effective response of nurses, and dimensions of preparedness and readiness of nurses for personal protective equipment. The stratified scale in this questionnaire uses a modified Likert scale with 4 answer choices of answers choices (4) strongly agree (3) agree (2) disagree and (1) strongly disagree.

The data analysis technique for the validity test used the Pearson correlation test. This analysis is done by correlating each item's score with the total score. The total score is the sum of all items. Question items that are significantly correlated with the total score indicate that these items are able to provide support in revealing what you want to reveal. Valid, if $r_{\text{count}} > r_{\text{table}}$ (2-sided test with sig. 0.05) then the instrument or question items have a significant correlation with the total score (declared valid). Testing the reliability of the instrument using the Cronbach Alpha formula, it reliable if the alpha value is > 0.7 .

RESULT

The nurse preparedness questionnaire in facing EID were distributed offline to participating nurses between April 17 and 20. A majority of the respondents are male with the last education level is Bachelor of Nursing.

Table 1. Recapitulation of Research Instrument Validity and Reliability Test Results

Statement	Pearson Correlation (r)	Sig. (2-tailed)	Description	Cronbach's Alpha (r)	Description
Knowledge of EID Preparedness					
Statement 1	0.911	0.000	Valid	0.970	Reliable
Statement 2	0.891	0.000	Valid	0.970	Reliable
Statement 3	0.771	0.000	Valid	0.971	Reliable
Statement 4	0.824	0.000	Valid	0.971	Reliable
Statement 5	0.891	0.000	Valid	0.970	Reliable
Statement 6	0.771	0.000	Valid	0.971	Reliable
Facility Preparedness and Response Readiness in Triage					
Statement 1	0.911	0.000	Valid	0.970	Reliable
Statement 2	0.891	0.000	Valid	0.970	Reliable
Statement 3	0.771	0.000	Valid	0.971	Reliable
Statement 4	0.469	0.000	Valid	0.973	Reliable
Statement 5	0.630	0.000	Valid	0.972	Reliable
Statement 6	0.592	0.000	Valid	0.972	Reliable
Statement 7	0.547	0.000	Valid	0.973	Reliable
Nurse's Effective Response					
Statement 1	0.891	0.000	Valid	0.970	Reliable
Statement 2	0.771	0.000	Valid	0.971	Reliable
Statement 3	0.717	0.000	Valid	0.972	Reliable
Statement 4	0.911	0.000	Valid	0.970	Reliable
Statement 5	0.628	0.000	Valid	0.972	Reliable
Statement 6	0.608	0.000	Valid	0.972	Reliable
Statement 7	0.599	0.000	Valid	0.972	Reliable
Statement 8	0.616	0.000	Valid	0.972	Reliable
Statement 9	0.442	0.000	Valid	0.974	Reliable
Statement 10	0.911	0.000	Valid	0.970	Reliable
Statement 11	0.911	0.000	Valid	0.970	Reliable
Nurses' preparedness and readiness for Personal Protective Equipment					
Statement 1	0.911	0.000	Valid	0.970	Reliable
Statement 2	0.891	0.000	Valid	0.970	Reliable
Statement 3	0.771	0.000	Valid	0.971	Reliable
Statement 4	0.824	0.000	Valid	0.971	Reliable

DISCUSSION

The questionnaire consists of 4 domains and 28 items with the results of reliability and validity confirmed through a survey of emergency nurses at one of the regional hospitals in Bali. The findings show that the questionnaire is structurally valid with 4 different but convergent subscales and has internal reliability. This study is meaningful in the sense of simplifying the tool by removing items that are not in accordance with the Indonesian context and developing statement items that are in accordance with statistical preparedness in dealing with emerging infectious diseases.

In particular, translation and reverse translation are based on consultation with nurses who are experienced in emergency situations as the first line to deal with emerging infectious diseases. Then the question items are adjusted to the theory of emerging infectious diseases. So, the WHO COV-19 preparedness questionnaire was developed into a nurse questionnaire in dealing with emerging infectious diseases. The validity of the contents of this tool for theoretical and clinical aspects has been verified by an emergency nursing lecturer who is qualified as an emergency nurse trainer in a hospital. The questionnaire was also revised after the pilot nurse survey to ensure that it could be easily understood both theoretically and clinically, and it was determined that the tool could be used.

This study has limitation in sample size. Guidelines for the respondent-to-item ratio ranged from 5:1 and others suggested that sample sizes of 50 should be considered as very poor, 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 or more as excellent (Tsang, Royse, & Terkawi, 2017). This study only involved 30 respondents using a minimum sample size of a quantitative study and the consideration of the location of data collection was only one regional hospital of the same type as the regional hospital to be addressed to apply this questionnaire in another study.

CONCLUSION

The conclusion in this study is that all statement items have been declared valid and reliable. It's just that the sample in testing the validity and reliability is still small, so further research is needed. For further research, the researcher has several suggestions, namely in the selection of respondents so that: taking into account the ideal sample for validity testing, namely 5-10 samples for each statement so that a minimum of 140 emergency nurses is needed, so that to fulfill this, several hospitals of the same type are needed.

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