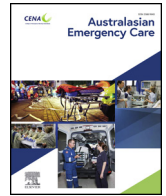




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Research paper

Indonesian emergency nurses' preparedness to respond to disaster: A descriptive survey

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ABSTRACT

Background: As frontline hospital staff, emergency nurses must be prepared to respond in disaster situations. While many disasters have befallen Indonesia, no available studies document disaster preparedness of nurses in this region. This study aimed to assess disaster preparedness among Indonesian emergency nurses, as well as examine factors that affected disaster preparedness in this group.

Methods: A cross-sectional study was conducted in four hospitals in Central Java. The Disaster Preparedness Evaluation Tool (DPET) was used to assess participant's disaster preparedness. This questionnaire was translated into Bahasa Indonesian using Brislin's (1970) back-translation technique.

Results: A total of 120 participants were included in the analysis. The findings indicate that Indonesian emergency nurses have a moderate level of disaster preparedness. Previous disaster experience and disaster training or education were positively associated with disaster preparedness. Additional years' experience nursing was not correlated with disaster preparedness.

Conclusions: These findings can be used as a basis to develop education programmes aimed at improving preparedness for disaster among Indonesian emergency nurses.

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1. Introduction

1.1. Background

Indonesia is well-known as a disaster-prone country suffering enormous damage and loss due to natural disaster [1]. Between 1984 and 2013, Indonesia experienced 325 natural disasters, accounting for 190,794 deaths [2] and costing approximately US \$26 billion in damage.

In addition to natural disasters, Indonesia has also experienced man-made disasters as an impact of the significant economic growth in recent decades [1]. The most frequent man-made disasters to occur in Indonesia are transportation accidents, including plane crashes and ferry capsizes [3]. The International Database calculated that 198 man-made disasters occurred in Indonesia between 1984 and 2013, with 9462 fatalities, US \$51 million economic loss and affected 53,357 Indonesians [3].

As the largest health profession, nurses play a vital role in disaster management particularly in disaster response [4]. The emergency unit, as a frontline responder during disaster response,

plays a crucial role in providing adequate care to disaster victims [5,6]. Many studies have demonstrated that nurses' disaster preparedness levels are low, however emergency nurses appear to have a higher level of disaster preparedness compared to other specialities of nursing [7–12]. To date, there have been few studies that have investigated Indonesian nurses' perception of their role and preparation for disaster response. This has created a gap regarding the conceptual role of nursing in disasters and its application in Indonesia, despite the long history of disasters occurring in this area.

1.2. Purpose of study

This study explored Indonesian nurses' disaster preparedness in order to identify the education and training needs of Indonesian nurses to save lives and reduce potential disabilities in future mass-casualty emergency events.

2. Methods

2.1. Study design

This study used a descriptive, non-interventional, cross-sectional study design with a convenience sample of 120

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emergency nurses from four hospitals in the Central Java area. Prior to study commencement ethical approval was granted by the QUT Human Research Ethics Committee number 1700000632 and the ethics committees of the four participating Indonesian hospitals.

2.2. Participant and setting

This study was conducted in four hospitals in the Central Java province of Indonesia, including the Dr. Kariadi Hospital, Dr. Adhyatma Hospital, Dr. Tirtonegoro Hospital and Dr. Moewardi Hospital. All nurses currently working in the emergency department of the participating hospitals were eligible to participate. Inclusion criteria for participating in this study included having a registered nursing license from the Indonesia Ministry of Health and working as a permanent staff member in the emergency department of one of the participating hospitals.

2.3. Data collection

Data were collected through a self-administered questionnaire using the Disaster Preparedness Evaluation Tool (DPET): Disaster Preparedness section. The DPET was designed by Tichy, Bond [13] in English and has three sections: *preparedness, mitigation and response*, and *evaluation*. This study used the preparedness section, which consists of 20 items assessing nurses' perception of their preparedness to respond to natural, man-made, and biological disasters. This questionnaire has been used in many countries to examine nurses' disaster preparedness, including Jordan, Saudi Arabia, and Asia-Pacific countries [11,14]. The tool was translated into Bahasa Indonesia using the Brislin [15] back-translation technique.

2.4. Data analysis

Data was analysed using frequency, percentage and measures of central tendency. Independent sample *t*-test, correlation test, one-way ANOVA test and regression analysis were used to investigate the relationship between total DPET:P score and demographic characteristics. General linear modelling was performed to adjust for potential confounding and assess the dependency of each variable on the DPET:P score.

3. Results

3.1. Demographic data

Of the 128 questionnaires handed out, 120 (93.7%) were returned and analysed. The majority of participants were aged less than or equal to 30 years old (41.7%). More male emergency nurses (52.5%) were involved in this study than female emergency nurses (47.5%), and most participants were married (90.8%). Most participants held a Diploma of Nursing (63.3%). More than half of the participants had experienced a disaster (58.3%) and had prior experience with disaster response (56.7%). The largest group of years of working experience as a nurse was 0–9 years (52.5%) and the largest group of years of working as an emergency nurse was 0–7 years' group (62.5%) (Table 1).

3.2. Level of preparedness

To assess emergency nurses' level of preparedness, the mean (SD) of DPET:P was categorised into: 1–2.99 as weak; 3–4.99 as moderate; and 5–6 as strong. Overall, all of the aspects investigated in this survey showed that participants had a moderate level of preparedness. Among those questioned, emergency nurses considered themselves unfamiliar with the signs, symptoms, and

Table 1
Socio-demographic characteristic of participants ($n = 120$).

Characteristic	
Age, frequency (%)	
≤30 years	50 (41.7)
31–40 years	46 (38.3)
41–50 years	18 (15.0)
≥51 years	6 (5.0)
Sex, frequency (%)	
Male	63 (52.5)
Status, frequency (%)	
Married	109 (90.8)
Education, frequency (%)	
Diploma of nursing	76 (63.3)
Bachelor of nursing	43 (35.8)
Master of nursing	1 (0.8)
Previous disaster experience, frequency (%)	
Yes	70 (58.3)
Disaster response experience, frequency (%)	
Yes	68 (56.7)
Previous disaster training, frequency (%)	
Yes	76 (63.3)
Years of work as an emergency nurse, mean (SD)	7.17 (5.2)
Additional years of worked as a nurse, mean (SD)	4.15 (5.9)
Combination of disaster training and disaster response experience, frequency (%)	
Yes	49 (40.8)
Hours work in a week	
≤30 h	12 (10.0)
31–40 h	27 (22.5)
>41 h	81 (67.5)

treatment of biological weapons (mean: 3.52, SD: 1.21). Emergency nurses also indicated that they were not highly familiar with the organisational logistics and roles of local/district/province/national agencies in a disaster-response situation (mean: 3.65, SD: 1.15). Similarly, emergency nurses reported weak to moderate familiarity with psychological interventions for patients with emotional and physical trauma in a disaster-response situation (mean: 3.76, SD: 1.12).

3.3. Previous disaster response experience

This study found that 68 emergency nurses (56.7%) had prior experience responding to a disaster. A statistically significant difference was found in mean DPET:P in emergency nurses with disaster response experience and those who had no experience ($p = 0.000$, $df = 118$, $t = 5.329$). On average, the DPET:P of emergency nurses with prior disaster response experience was 12.95 points higher than those with no prior experience (95% CI = 8.14–17.7).

3.4. Previous disaster education/training

In this study, 76 emergency nurses (63.3%) reported having prior training or education related to disaster management. Our study found a statistically significant difference in mean DPET:P of emergency nurses with previous disaster training and those without ($p = 0.001$, $df = 68.29$, $t = 3.481$). The DPET:P of emergency nurses who had prior disaster education/training group was 9.99 points (95% CI = 4.27–15.73) higher than group who had no prior disaster education/training.

3.5. Years worked as an emergency nurse

Mean (SD) years working as an emergency nurse was 7.17 years (5.20). A statistically significant correlation was identified between

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