Research paper

Knowledge, attitude, and practice of ambulance nurses in prehospital care in Malang, Indonesia

Suryanto [a,b,*], Virginia Plummer [a,c], Malcolm Boyle [d]

[a] School of Nursing and Midwifery, Monash University, Australia
[b] School of Nursing, Brawijaya University, Indonesia
[c] Peninsula Health, Australia
[d] School of Medicine, Griffith University, Australia

ARTICLE INFO

ABSTRACT

Background: Nurses are responsible for staffing ambulances in Indonesia. However, those nurses may have limited knowledge and skills in prehospital care because the Indonesian nursing curriculum focuses mostly on in-hospital care. This study investigated the perceived knowledge, attitude, and practice of ambulance nurses in prehospital care in Malang, Indonesia.

Method: This was a cross-sectional study consisting of a paper-based survey involving 465 participants from 45 health care services in Malang, Indonesia.

Results: Participants' attitude score for prehospital care was the highest and knowledge of prehospital care was the lowest score. This study revealed that knowledge ($p = 0.022$), attitude ($p = 0.012$), and practice scores ($p = 0.026$) were significantly different based on the training experience. The education level of participants contributed significantly to the difference in attitude ($p = 0.001$) and practice scores ($p = 0.034$). Participants' experience had a significant contribution to the difference in attitude score ($p = 0.002$). The knowledge ($p = 0.001$) and practice ($p = 0.002$) for prehospital care of hospital-based ambulance nurses were significantly higher than *puskesmas*-based ambulance nurses.

Conclusions: This study revealed that Indonesian ambulance nurses lacked prehospital care knowledge and skills. The findings from this study provide information to establish a national regulation covering human resources for prehospital care in Indonesia both for educational and clinical levels.

Introduction

Indonesia is the fourth largest country by population in the world with more than 250 million people [1]. With more than 13,000 islands [2], Indonesia comprises a 1,922,570 km^2 land area and 3,257,483 km^2 broad water area with Java, Sumatera, Kalimantan, Sulawesi and Papua the five largest islands in the country [3]. There are two major health services, hospitals and community health centres called *puskesmas*. The *puskesmas* are staffed with medical doctors, nurses and midwives and function at the district level [4]. The districts are a subdivision of the regency or city government. The main focus of the *puskesmas* is to provide community-based health services for prevention and cure, especially for family planning services, antenatal and postnatal care, immunisation, nutrition and sanitation consultations, and dental

services [5]. About one third of *puskesmas* (3378 of 9731) have inpatient facilities [1]. Nurses working in a *puskesmas* are supplied with an ambulance and can provide emergency care to the community. However, some of the *puskesmas*-based ambulances only contain a stretcher and are used primarily for transporting staff.

On the other hand, there were 2406 public hospitals in Indonesia at the end of 2014 consisting of 1855 general hospitals and 551 specialty hospitals [1]. There were also 807 private hospitals, 545 general hospitals and 262 specialty hospitals [1]. Nurses working in hospital Emergency Departments (EDs) are also responsible for staffing the ambulance. This is similar to the experience of Sweden [6,7]. Indonesian nurses are responsible for staffing ambulances because paramedics or Emergency Medical Technicians (EMTs) are not yet recognised as part of the health workforce in Indonesia [8]. Compared to a *puskesmas*, in general, a hospital has more resources to provide prehospital care to the community. The hospital-based ambulance is better equipped compared to the *puskesmas*-based ambulance and some hospital-based ambulance nurses have received specialised training in prehospital and emer-

gency care. These two levels of healthcare provision are consistent across the country. However, only a small number of people (11%) use the ambulance service with most of the patients brought to the hospitals by public or private transport [9].

Indonesian nurses have formal education in emergency care during their Bachelor of Nursing (BN) or Diploma of Nursing course relevant to the in-hospital setting; however, there is no formal prehospital education for nurses who work on an ambulance. Nursing education in Indonesia is divided into five levels, Diploma in Nursing, Bachelor in Nursing, Master in Nursing, Nursing Specialist, and Doctor in Nursing [10]. The majority of nurses in Indonesia are Diploma qualified, for example, in 2012 East Java province had 28,236 nurses with 26,056 (92.3%) Diploma in Nursing qualified or below [11]. Nursing education in Indonesia focuses mostly on in-hospital care including emergency nursing and only a few topics of prehospital emergency care are covered during undergraduate nurse training [12]. With limited knowledge and skills of prehospital care, nurses working in the *puskesmas* and hospital EDs are responsible for staffing the ambulances. This situation raises the question, "What is the perception of nurses' knowledge, attitude and practices about prehospital care in Indonesia?"

Material and methods

Study design

This was a cross-sectional study consisting of a paper-based survey investigating the perceived knowledge, attitude, and practice of ambulance nurses.

Setting

The study was undertaken in Malang, East Java Province, Indonesia. Three districts, using codes District A, B, and C, were involved in the study. Those three districts are varied in terms of area, population, and health facilities and were chosen because they represent the various levels of district from a rural area to an urban area. District A is the most developed and urban area compared to the other two districts. District B is the most rural area while District C is between A and B from rural to urban. Moreover, the area development and health facilities of District C is in between District A and B. There are 59 *puskesmas* and 45 hospitals in the three districts. Due to the time constrain, this study involved a total of 45 health facilities, 22 hospitals and 34 *puskesmas* from those three districts.

Participants/Population

Convenience sampling was used in this study. For analysis purposes, participants were divided into three groups based on geographic regions, groups A, B and C with two subgroups for each region, those working in a *puskesmas* and hospital ED. The data collection was performed from January to March 2015 and involved ambulance nurses from those three groups and subgroups. There is no published data available for the number of ambulance nurses in both ED hospitals and *puskesmas* specifically for those three districts. However, the 2013 annual report from East Java province stated that there were 3627 nurses working in both hospitals and *puskesmas* in the three districts, with 2836 in the hospitals and 791 in the *puskesmas* [11]. In 2014, the number of nurses in District A was the highest, 2032 nurses, compared to Districts B and C, 1107 and 271 respectively [13].

Instrumentation

The questionnaire was adapted from a previous study in India by Kumar et al. [14]. The original questionnaire consisted of 30 items and three sub-scales with 10 questions each for knowledge, attitudes, and practices. The original questionnaire was tested by its original authors for face validity by review of two peers and was piloted with 10 participants. However, there is no information regarding the results of the validity and reliability testing of the original questionnaire.

For this study, modifications were made to the questionnaire to suit Indonesian practice. Modifications included were in terms of the availability of medical instruments and prehospital practice which are not available in Indonesia such as a mucous extractor included as basic lifesaving equipment and the availability of EMS training and Centralised Accident and Trauma Services (CATS). Modification was also made by adding several training courses which are available in Indonesia but were not in the original questionnaire such as Trauma Nursing Care (TNC), General Emergency Life Support (GELS), Triage Officer, Electrocardiography and Resuscitation, and prehospital care of head, musculoskeletal, and spinal injuries. The questionnaire was translated into Bahasa Indonesia by the lead author.

The modification resulted in a total of 41 Likert-Scale questions, 13 for knowledge, 20 for attitude, and 8 for practice. The questions related to the prehospital knowledge included the perceived understanding of patient management during transport and case management in the prehospital setting. The questions related to attitude covered participants' opinions about continuing education in prehospital care for both healthcare providers. The prehospital practice-related questions sought participants' opinions about their prehospital practice such as performing cardio pulmonary resuscitation. The questions were on a Likert-Scale of one to four, ranging from "very poor" to "very good" for the "knowledge" sections and the scale ranged from "strongly disagree" to "strongly agree" for the "attitude" and "practice" sections. The translated modified questionnaire was tested during a pilot study which involved 14 ambulance nurses both from hospitals and *puskesmas*. An internal consistency test was undertaken using Cronbach's Alpha which demonstrated a scale reliability score of 0.932, meaning the questionnaire has high internal consistency.

Procedures

All ambulance nurses in 45 health care services, 22 hospitals and 34 *puskesmas*, were invited to participate in the study. Nurses were included in the study if they worked in the *puskesmas* or hospital ED and were roasted for staffing the ambulance at their institutions. One hundred and eighty-five questionnaires were distributed to the hospital-based ambulance nurses and 372 questionnaires to the *puskesmas*-based ambulance nurses.

An information session about the study was provided by one of the authors in each healthcare institution. All potential participants were provided with the explanatory statement and questionnaire. There was a sealed box provided for participants to return the completed questionnaires. All returned completed anonymous questionnaires were coded and processed for analysis.

Ethics

Ethical approval was granted by two ethics committees, the Monash University Human Research Ethics Committee (MUHREC), in Australia, project number CF14/543-2014000199 and the Health Research Ethics Committee of the Ministry of Health of Indonesia, project number LB.02.01/5.2/KE.451/2014.