Original Research

An Analysis on Nurse Knowledge and Attitude on Pre-Hospital Ambulance Service Satisfaction in Bali, Indonesia

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Article Info

Abstract

Introduction: The ambulance service quality has a great impact on well-being and survival of emergency patients. The patient satisfaction was one of main metrics to assess ambulance service and an indicator of quality to manage pre-hospital emergency service. This research was aimed to analyze the correlation between nurse knowledge and attitude and satisfaction of pre-hospital ambulance service in Bali, Indonesia.

Methods: This research exerted correlative analytic method and cross-sectional approach. Moreover, this research involved as many as 271 respondents who were consisted of 127 nurses and 144 patients. The cluster sampling technique was used to select the research respondents. The analysis result of Spearman's rank test referred the knowledge (p = 0.001; r = 0.269) and attitude (p = 0.000; r = 0.307) significantly have a positive relation to the pre-hospital ambulance service satisfaction in Bali.

Results: The analysis result of multiple linear regression test referred that the nurse attitude was a dominant factor which related to the pre-hospital ambulance service satisfaction in Bali. Therefore, it needed to conduct a periodical formal training in order to increase the quality of ambulance nurse service which could affect the increase of pre-hospital ambulance service satisfaction in Bali, Indonesia.

Conclusion: The result of multiple linear regression test referred that the nurse attitude was a dominant factor which related to the pre-hospital ambulance service satisfaction in Bali. Therefore, it needed to conduct a periodical formal training in order to increase the quality of ambulance nurse service which could affect the increase of pre-hospital ambulance service satisfaction in Bali, Indonesia.
INTRODUCTION

Ambulance is one of EMS (Emergency Medical Services) components which is available for 24 hours in hospital and public health center with inpatient facility and also used for pre-hospital patient service. According to Minister of Health Regulation of Republic of Indonesia 47, 2018 on emergency service that the ambulance is used for medical evacuation from incident or patient location to health service facility or referral between health facilities by maintaining the stability of patient’s condition through resuscitation [1]. The ambulance service in its implementation is not only used to help the victim who needs surgical emergency, but also patient who experiences medical emergency. The most frequent surgical emergency is trauma case or traffic accident. Based on the data in Bali, the total victim of traffic accidents keep increasing in these two last years. In 2018, there are 1,827 accident cases with the description of 497 victims died, 220 severe injuries, while the rest have minor injuries [2]. In 2019, Bali has recorded as many as 3,341 accident cases with the description of 420 victims died, 261 severe injuries, and 2,462 minor injuries. Through ambulance service, it is expected to offer an early treatment for accident victims optimally.

The quality of ambulance service has a great impact to the well-being and survival of emergency patients. The patient satisfaction is one of main metrics to do assessment on ambulance service [3]. The patient satisfaction is also a center part of health service giving which is aimed to improve the service quality [4]. The patient satisfaction on ambulance service is an essential quality indicator and can be used as an indicator to manage pre-hospital emergency service [5].

The most frequent problem which appears on pre-hospital service is the nurses who are on duty in ambulance [6]. The ambulance nurses must have a good emergency competence, because they might find different condition among traumatic patients in each accident case [7]. Abate & Mekonnen (2020) have stated that knowledge and practice of ambulance nurse to handle pre-hospital emergency is inadequate [8]. This problem is caused by lack of trainings performed by ambulance nurse. Suryanto, Boyle & Plummer (2018) have argued that no staffs have specific training on pre-hospital service in Indonesia. The nurses who are on duty in ambulance do not also get formal education on pre-hospital nursing and treatment [9].

The first aid on accident victim must be performed as optimal as possible by the ambulance nurses in order to prevent disability and death for the victim. The ambulance services from Badung District, Klungkung District, and Denpasar City have different personnel number, call center and ambulance. This condition can bring various user satisfaction levels through ambulance service. Based on those problems, the researcher is interested to conduct a further study on the analysis of nurse factors, particularly between nurse knowledge, attitude, and skill and satisfaction of pre-hospital ambulance service in Bali. The objective of this research is to analyze the correlation between nurse factors
(knowledge, attitude, and skill) and pre-hospital ambulance service satisfaction in Bali, Indonesia.

METHODS

Study Design

This research was a quantitative which exerted correlative analytic research design and cross-sectional approach. This research was conducted in Bali by taking the location of Denpasar City, Badung District, and Klungkung District which have represented Bali and already have pre-hospital ambulance service. This research was held from March 2021 until May 2021.

Sample

The total research sample was about 271 respondents which comprised of 127 nurses and 144 patients who have been handled by those nurses. The sample was taken through probability sampling method, particularly cluster sampling technique.

Instrumentation

The research data was collected through questionnaire which was then analyzed by exerting multiple linear regression test, since the independent and dependent variables have numerical data scales. Two forms of questionnaire were used to collect the research data. The questionnaire on nurse knowledge and attitude was adopted from the previous research done by Suryanto, et al. in Malang, East Java. The questionnaire on nurse knowledge was contained of 13 question items in likert scale which covered nurse comprehension on pre-hospital emergency service. The questionnaire on nurse attitude was contained of 20 question items in likert scale relating to the nurse attitude towards pre-hospital emergency service. The questionnaires have passed validity and reliability tests with Cronbach’s alpha value 0.932 [9]. The ambulance service satisfaction was examined by using Consumer Emergency Service Scale questionnaire which was adopted from a research done by Larsson, et al [10] that there were 16 question items which could identify the patient satisfaction on nurse service. The questionnaire was originally written in English which was then translated by the researcher and tested its validity and reliability with Cronbach’s alpha value 0.882.

Ethic

This research has been ethically tested in Research Ethics Committee of Medicine Faculty of Udayana University and asserted as a valid research with the following registration number 888/UN14.2.2.0414.

Statistical Analysis

IBM SPSS 21 software was exerted to analyze the research data. The descriptive analysis was used to measure minimum, maximum, and mean values of each variable. The researcher used Spearman’s rank test to test the relation among variables and multiple linear regression test to identify the dominant variable which was related to ambulance service satisfaction.
RESULTS

The Illustration of Pre-hospital Ambulance Service Satisfaction in Bali

The descriptive analysis displayed on table 1 has figured out the mean value of pre-hospital ambulance service satisfaction in Bali in approximately 61,63 ± 1,99 with median value of 61, minimum value of 57, and maximum value of 66. The result of Kruskall-Wallis test showed p value 0,000 (p<0,05). This result referred a difference on patient satisfaction in each Bali district which has taken pre-hospital ambulance service.

The Illustration of Nurse Knowledge and Attitude on Pre-hospital Ambulance Service

The pre-hospital ambulance nurses in Bali have mean value of knowledge in approximately 39,77 ± 1,77 with median value of 40, maximum value of 44, and minimum value of 37. The result was differed from Kruskall-Wallis test and showed the value 0,000 (p<0,05). This result signified a difference on nurse knowledge value in each district in Bali which have performed pre-hospital ambulance service. The pre-hospital nurse attitude mean value was approximately 73,95 ± 2,49 with median value of 74, minimum value of 69, and maximum value of 80. The p value on Kruskal-Wallis was about 0,011 (p<0,05) referred a difference on pre-hospital ambulance nurse attitude value in each district in Bali to provide pre-hospital ambulance service in Bali.

The Relation between Nurse's Knowledge and Attitude with Pre-hospital Ambulance Service Satisfaction in Bali

The table 3 explained a very weak relation with statistically positive direction between nurse knowledge and pre-hospital ambulance service satisfaction in Bali (p<0,05; r = 0,269). The result of Spearman's rank analysis also indicated a weak relation with positive direction between nurse attitude and pre-hospital ambulance service in Bali (p<0,05; r = 0,307). The analysis result also found a very weak relation with positive direction between nurse skill and pre-hospital ambulance service satisfaction in Bali (p>0,05; r = 0,189). According to the result on table 5.6, this research stated that the higher value of nurse knowledge, attitude, and skill, the higher value of pre-hospital ambulance service satisfaction.

According to the table 4, the nurse attitude was the most dominant factor which related to pre-hospital ambulance service satisfaction in Bali (Standardized coefficient B 0,275; p 0,001). Thus, the modeling equation for multiple linear regression analysis was written as: Y=constant + α1x1 + α2x2. Satisfaction = 30,018 + 0,267 (knowledge) + 0,225 (attitude).

This equation showed that the variable of pre-hospital ambulance service satisfaction could be predicted by knowledge and attitude variables. Moreover, this equation also indicated that each increase of one point on nurse knowledge would increase about 0,267 points of satisfaction value. Each increase of
one point on attitude value would increase about 0.225 points of satisfaction value [11].

**Table 1**

Characteristics of Respondents

| Variable        | (%) | Mean | SD  | Sig. |
|-----------------|-----|------|-----|------|
| Age             | 41.8 | 12.11 | .062 |
| Gender          |      |      |     | .231 |
| Male            | 46.1 |      |     |      |
| Female          | 53.9 |      |     |      |
| Education level |      |      |     | .077 |
| Primary school  | 11.5 |      |     |      |
| High school     | 57.1 |      |     |      |
| Bachelor        | 31.4 |      |     |      |
| Occupation      |      |      |     | .084 |
| PNS             | 10.1 |      |     |      |
| Self-employee   | 69.1 |      |     |      |
| TNI / POLRI     | 5.2  |      |     |      |
| Not working     | 15.6 |      |     |      |

**Table 2**

Distribution of the Mean Value of All Variables

| Variable                          | Mean | SD   | Range of Possible Score |
|-----------------------------------|------|------|-------------------------|
| Patient satisfaction              | 14.42| 11.02| 0 – 18                  |
| Maintaining beliefs               | 11.53| 12.74| 0 – 15                  |
| Culture care preservation         | 11.62| 11.72| 0 – 15                  |
| Knowing                           | 13.72| 12.31| 0 – 15                  |
| Being with                        | 11.83| 12.74| 0 – 15                  |
| Negotiation                       | 10.46| 11.82| 0 – 15                  |
| Doing for                         | 11.54| 12.18| 0 – 15                  |
| Enabling                          | 12.54| 11.92| 0 – 15                  |
| Restructuring                     | 11.28| 12.18| 0 – 15                  |

**Table 3**
Multiple Linear Regression Test

| Variable                                                        | R-Square | β     | Sig. |
|---------------------------------------------------------------|----------|-------|------|
| MB, CP, KN, BW, NE, DF, EN, and RE together predict PS        | 0.815    | 0.074 | 0.022|
| Maintaining beliefs (MB)                                       |          | 0.129 | 0.032|
| Culture care preservation (CP)                                |          | 0.087 | 0.015|
| Knowing (KN)                                                  |          | 0.093 | 0.038|
| Being with (BW)                                               |          | 0.161 | 0.003|
| Negotiation (NE)                                              |          | 0.098 | 0.033|
| Doing for (DF)                                                |          | 0.091 | 0.043|
| Enabling (EN)                                                 |          | 0.082 | 0.034|
| Restructuring (RE)                                            |          |       |      |

DISCUSSION

The Relation Between Nurse Knowledge and Pre-hospital Ambulance Service Satisfaction in Bali

The nurse knowledge was one of nurse factors that could affect the service performed by the nurse [12]. The better nurse knowledge would determine the higher level of satisfaction level [13], [14]. This research result was in line with the findings acquired by the researcher. The patient satisfaction on pre-hospital ambulance in Bali was statistically related to the nurse knowledge (p<0.05).

The pre-hospital ambulance nurse who has a good knowledge would be more skillful in counseling, information delivery, and education to the patient during the patient service, so no doubt, it would affect the related patient [15]. The information received by the patient relating to patient condition and treatment given by the nurse to him would turn the patient to be more comfortable and then affect to the increase of patient satisfaction. The patient who has received a whole and complete information concerning to his condition when handled by the nurse would feel as a part and being involved in his own treatment and care. This treatment could also affect the patient satisfaction to get pre-hospital emergency service. In line with this research, Daada (2016) in his research has conveyed a positive relation between nurse knowledge and implementation of an effective communication within nursing service delivery [16]. Further, the higher level of knowledge owned by the nurse would determine the better communication performed by the nurse. The good knowledge could be a basic provision for pre-hospital nurse to provide a good nursing service [17].

The Relation Between Nurse Attitude and Pre-hospital Ambulance Service Satisfaction in Bali

A good nurse attitude to deliver nursing service would improve patient satisfaction during the service [13], [14]. The similar research has also stated about positive attitude performed by the nurse to give
nursing service could raise a positive effect on patient satisfaction [18]. The positive attitude owned by nurse relating to emergency service would affect greatly on patient in his emergency condition [19].

The relation between nurse attitude and pre-hospital emergency service might be existed, since due to the caring-based nursing service delivery, the nurse attitude to perform the service would indicate how far the nurse care to give nursing care intervention. The similar analysis has been stated by Rahayu & Sulistiawati (2018) in their research, the nurse attitude was related to caring behavior performed by the nurse [20] and then caring behavior would affect patient satisfaction [21]. The nurse who has a positive attitude on pre-hospital emergency service would show a good caring behavior during pre-hospital ambulance service, then, it could positively affect the satisfaction on pre-hospital ambulance service in Bali.

**The Most Related Nurse’s Factors to Pre-hospital Ambulance Service Satisfaction in Bali**

The patient satisfaction was a multidimensional concept which was oriented on the interaction between ambulance nurse and patient handled [22]. The nurse knowledge and attitude on pre-hospital emergency service was identified by the researcher to have a positive relation to the pre-hospital ambulance service satisfaction in Bali. The similar research result has written that the nurse knowledge and attitude have effects on patient satisfaction served by the nurse [23]. Another previous research done by Layuk, et al. (2017) has also found the similar finding to the recent research that the nurse knowledge and attitude to perform nursing in inpatient room would give a positive effect on patient satisfaction [14].

The nurse knowledge and attitude were a measure which could build nurse competence. The nurse knowledge and attitude on pre-hospital emergency service would form a competent nurse to deliver and provide pre-hospital ambulance service [24]. The good nurse competence would be in line with the treatment and care given by the nurse [25]. This condition would indirectly affect the patient satisfaction to get service from the nurse, so the improvement of nurse knowledge and attitude would be in line with the increase of patient satisfaction value.

This research result showed that the nurse attitude on pre-hospital emergency service was the most dominant nurse factor which related to the pre-hospital ambulance service satisfaction in Bali. This research result was in line with the research done by Layuk, et al. (2017) which has asserted that the nurse attitude to perform service has a dominant relation and value to the patient satisfaction to receive treatment [14]. Supporting to this recent result, Nugrahaningsih (2016) has also said that the nurse attitude was a nurse factor which has the highest value that could build patient satisfaction to receive treatment and nursing service [26].

The ambulance nurse service to serve the patient has an important role within the interaction process in context of emergency service. The positive attitude owned by nurse could affect the nurse communication with
the patient. Skodova, et al. (2018) have argued that the positive attitude would form a good professional communication [27]. Moreover, the good communication was significant for the quality of health service given to the pre-hospital ambulance patient, because this aspect could increase the patient satisfaction [18]. The positive nurse attitude on pre-hospital emergency service would also encourage the nurse to be more active in developing their competence. The nurse competence development would be in line with the patient satisfaction within nursing and treatment [25].

The nurse knowledge and attitude have a positive relation to pre-hospital ambulance service satisfaction. The nurse attitude was identified to be the most dominant nurse factor building the patient satisfaction on pre-hospital ambulance service in Bali. Next, the nurse knowledge and attitude on pre-hospital emergency service would form a competent nurse to perform nursing service in pre-hospital ambulance, thus, it could increase the satisfaction on pre-hospital ambulance service in Bali.

LIMITATION

Researchers in this study were unable to conduct research on all internal and external factors related to pre-hospital ambulance services due to time and cost constraints. Not all respondents in filling out research questionnaires can be supervised by researchers so that it is possible to influence the quality of the results obtained.

IMPLICATIONS FOR NURSING

The results of this study obtained a final model where the value of knowledge and attitudes of nurses can predict and increase the value of pre-hospital ambulance service satisfaction in Bali. These results can be used as reference material for nurses to continuously develop knowledge and attitudes related to pre-hospital emergency services so that the quality of ambulance services can be improved and patients feel satisfied in obtaining services.

The government and related agencies that oversee pre-hospital ambulance services should be able to provide regular training and refresher materials related to pre-hospital ambulance services. This action was taken to be able to maintain and improve the knowledge and attitudes of nurses in shaping the professional competence of nurses so as to increase the satisfaction of pre-hospital ambulance services in Bali.

CONCLUSION

The results of the analysis of multiple linear regression tests show that nurses’ attitudes about pre-hospital emergency services are the most dominant nurse factors that have a relationship with pre-hospital ambulance service satisfaction in Bali. A positive attitude has an impact on professional communication in providing services that have a relationship that is in line with the satisfaction of pre-hospital ambulance services in Bali.

The value of pre-hospital ambulance service satisfaction in Bali can be determined by the value of the knowledge and attitudes of nurses about pre-hospital emergency
services. The knowledge and attitudes of nurses can shape the professional competence of nurses in providing prehospital ambulance services so as to increase the satisfaction of pre-hospital ambulance services in Bali.

Nurses should cultivate the positive attitude they have about pre-hospital emergency services so that they can improve the quality of services provided. Relevant agencies or services that oversee ambulance services are expected to always provide facilities and accommodations for ambulance nurses to be able to increase their knowledge and attitudes about pre-hospital emergency services.

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