ORIGINAL ARTICLE

Perception, attitudes and expectations among people toward emergency medical services system in Samut Songkhram Province, Thailand

Niwat Songsin[1*], Thinnaphat Pattamarit[1], Pronsiwa Jantawee[1], Wanwimon Mekwimon Kingkaew[1], Sureewan Siladlao[1], Kanokporn Somporn[1], Tossapon Chamnankit[2] Badint Laokakham[3]

[1]Department of Community Public Health, College of Allied Health Sciences, Suan Sunandha Rajabhat University, Bangkok,Thailand
[2] Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai, Thailand
[3]Safety Engineer, Horizon Plus Company Limited, Bangkok, Thailand

Corresponding Author: Niwat Songsin **Email:** Niwat.so@ssru.ac.th

Received: 5 August 2023 **Revised:** 25 September 2023 **Accepted:** 28 September 2023 **Available online:** January 2024
DOI: 10.55131/jphd/2024/220101

ABSTRACT

The emergency medical service system is a pre-hospital medical service that effectively helps reduce the severity of emergencies and mortality rates before transferring patients to the hospital. This cross-sectional study investigated people's perceptions, attitudes, and expectations toward the emergency medical services system and aimed to find the relationship between the perceptions, attitudes, and expectations toward the emergency medical services system in Samut Songkhram province, Thailand. The samples consisted of 491 individuals who were selected using a multi-stage sampling method. Data were collected through a self-administered questionnaire and analyzed using linear regression analysis to identify correlations. Results revealed that most participants demonstrated a good overall perception of the use of the emergency medical service system ($M = 2.46$, $SD = 0.27$), a good attitude towards the emergency medical service system ($M = 2.40$, $SD = 0.23$), and a high level of expectation towards the emergency medical service system ($M = 2.85$, $SD = 0.25$). Perception of the use of emergency medical services and attitude towards the emergency medical service system showed positive correlation with expectation towards the emergency medical service system, with $R^2 = 0.23$ (p-value < 0.05). These findings can be used to plan and develop strategies for improving the utilization of emergency medical services, ensuring that the public is informed, understands, and accesses the emergency medical service system correctly and effectively.

Key words:
perception; attitudes; expectations; emergency medical services system

Citation:
Niwat Songsin, Thinnaphat Pattamarit, Pronsiwa Jantawee, Wanwimon Mekwimon Kingkaew, Sureewan Siladlao, Kanokporn Somporn, Tossapon Chamnankit, Badint Laokakham. Perception, Attitudes and Expectations among people toward Emergency Medical Services System in Samut Songkhram Province, Thailand. J Public Hlth Dev. 2024;22(1): 1-11 (https://doi.org/10.55131/jphd/2024/220101)

INTRODUCTION

Emergency illness is a significant global public health issue due to an increase in mortality rates caused by emergency conditions and all types of sickness.[1] According to the World Health Organization (WHO), the top three causes for non-traumatic global deaths are cardiovascular diseases (CVDs) at 32%, followed by acute stroke causing 5.5 million deaths (12.9%) with new cases increasing to 14.5 million per year, and chronic obstructive pulmonary diseases at 5.6%. The 9th leading cause of death among traumatic patients (trauma) is road traffic accidents, constituting 2.2% of all causes of death.[2-3] The National Institute for Emergency Medicine reported that the three most common causes of death in Thailand were cancer, for which the incidence rate was 12 per 100,000 population, stroke, for which the incidence rate was 53 per 100,000 population, and pneumonia, for which the incidence rate was 53.3 per 100,000 population.[4] According to the operational performance during 2017-2021, it was found that 30-40% of emergency patients received emergency treatment within 8 minutes, indicating that more than two-thirds of emergency patients were unable to receive any treatment before arriving at a hospital within the 8-minute timeframe.[5]

Samut Songkhram, Thailand's smallest province, consists of three districts. The summary of the operational performance of Samut Songkhram Provincial Public Health Office during 2022-2023 revealed that 25.30% of trauma patients in the emergency department suffered from road traffic accidents, followed by falls, and 74.28% of non-trauma patients suffered from chronic diseases, with the number seeming to increase every year.[6] In 2021, the number of deaths caused by road traffic accidents was 28.11 per 100,000 population. Compared with other vehicle accidents, motorcycles were the leading participants in traffic accidents, at 86.60%. Samut Songkhram is considered a province with a high rate of road traffic deaths compared to its size.[7] It can be seen that most medical emergencies in Samut Songkhram were not from accidents but from chronic diseases, such as stroke, diabetes, dyslipidemia, and hypertension, at 74.28%, which seem to be the leading causes of deaths and disabilities. Based on the preliminary study conducted by the researchers, it was revealed that the public holds misconceptions about the emergency medical services system and lacks fundamental information about procedures for utilizing the system. These data imply that the emergency medical services system in Samut Songkhram province might be influenced by insufficient public awareness, limited access to the service, or reduced public satisfaction. In Samut Songkhram province, there are three hospitals that provide emergency medical services. These hospitals are Somdet Phra Phutthaloetla Hospital, Amphawa Hospital, and Napalai Hospital. They have specialized medical teams, including emergency medical practitioners and paramedics, who offer emergency medical care to patients. Additionally, there are two rescue teams that provide emergency medical services: Sawangbenjatam's Rescue and Sapha Ratchan Rescue. These teams consist of personnel who have undergone training via the Emergency Medical Technician (EMT) course. Based on a review of the literature relevant to the emergency medical service system in many areas, it was found that perception was a significant basis of self-learning, leading to critical thinking and understanding.[8] The study results on perceptions and expectations regarding emergency medical services among emergency patients and emergency patients' relatives indicated that perceptions of emergency medical services were at a low level, while expectations were at a moderate level.[9] These findings indicate that patients and their relatives generally have a negative attitude toward emergency medical services, with both perceptions and expectations of those services requiring improvement. People's attitudes in each area affect their

perceptions and behavior in receiving emergency medical services in different ways[10-11] and from previous studies conducted abroad, it was found that in Poland there is equal access to the healthcare system, which is based on the insurance model. It comprises numerous institutions where patients can access healthcare services. Assistance in pre-hospital and outpatient settings is typically provided by doctors, nurses, and paramedics.[12] Such problems lead to the improper use of emergency medical services.[13] From what was mentioned earlier, the researcher observed the importance of the emergency medical service system in Samut Songkhram province and was interested in studying people's perceptions, attitudes, and expectations toward the emergency medical services system and in finding the relationship between the perceptions, attitudes, and expectations toward the emergency medical services system in Samut Songkhram province, Thailand, for the purposes of making activity plans and developing policies at the provincial level in an appropriate manner; for example, the development of capacity in emergency care to enhance people's perception of the emergency medical service system.

MEDTHODS

The target population of this cross-sectional study comprised people aged over 20 years in Samut Songkhram province, Thailand. Data were collected from March 2023 to June 2023 by using a questionnaire.

Population and sample

The population was indefinite and the researcher did not have access to the exact population; therefore, Cochran's[14] formula was applied to estimate the sample size. The sample size was calculated based on Cochran's formula with a 95% confidence interval, a power of 60%, a significance level of 0.5, and an acceptable margin of error of 0.5, yielding a sample of 369 participants. The researcher added at least 30% to the estimated sample size to allow for losses.[15] Therefore, the sample size needed was 491 participants. Inclusion criteria in this study were as follows: subjects aged over 20 years in Samut Songkhram province, living in villages where the subjects sampled were literate and willing to participate in the study. Exclusion criteria consisted of subjects who provided incomplete responses to the instruments. The sample was selected by a multi-stage sampling method as follows:

Step 1: Samut Songkhram Province is divided into 3 districts and all were sampled to ensure even distribution across the province.

- Step 2: Simple random sampling was used to select 3 sub-districts from each district, giving a total of 9 sub-districts.

Step 3: Villages were selected using simple random sampling, with 3 chosen from each sub-district, giving 27 villages.

Research instrument was a questionnaire, divided into 4 parts as follow:

The research instrument was a questionnaire, divided into 4 parts as follows:

Part 1: General information, i.e. gender, age, marital status, education, occupation, awareness of the emergency number 1669 (hotline), knowledge about the local rescue or emergency ambulance service and channels to access emergency services (1669) or ambulance consisting of 8 items.

Part 2: Perceptions of using the emergency medical service system. This section of the questionnaire was adapted from the previous research[15], 17 items, divided into 4 components, i.e., perception of information gathering, telephone number, and speed, perception of emergency medical services and expenses, perception of service areas, and perception

of preliminary medical assistance during the process of patient transfer, and divided into 3 levels, classified as good, moderate, and low. The ranges of mean scores were divided into 3 levels; a score in the range of 2.34-3.00 means a good level of perception, a score in the range of 1.67-2.33 indicates a moderate level of perception, and a score of 1.00-1.66 means a low level of perception.

Part 3: Attitude towards the emergency medical service system. This section of the questionnaire was adapted from the previous research[10], with 19 items divided into 4 components, i.e., attitude towards safety in transferring patients, attitude towards the operations of healthcare personnel, attitude towards information gathering, and attitude towards emergency medical service expenses, and divided into 3 levels categorized as agree, agree moderately, and disagree. The ranges of mean scores were divided into 3 levels; a score in the range of 2.34-3.00 means a good level of attitude, a score in the range of 1.67-2.33 indicates a moderate level of attitude, and a score in the range of 1.00-1.66 means a low level of attitude.

Part 4: Expectation towards the emergency medical service system. This section of the questionnaire was adapted from the previous research[13], with 15 items, divided into 3 components, i.e., expectation towards services, expectation towards personnel, and expectation towards information gathering, materials, equipment, and others, and divided into 3 levels categorized as agree, agree moderately, and disagree. The ranges of mean scores were divided into 3 levels; a score in the range of 2.34-3.00 means a high level of expectation, a score in the range of 1.67-2.33 indicates a moderate level of expectation, and a score in the range of 1.00-1.66 means a low level of expectation.

The questionnaire was measured for content validity by three experts in emergency medical service systems. The results obtained from the experts were used to investigate the congruence between the question items and research objectives using the index of item objective congruence (IOC), for three sets of the questionnaire, achieving scores of 0.94, 0.98, and 0.86, respectively. The questionnaire was pretested by 30 people having similar characteristics to the target samples. The reliability of the whole questionnaire was tested using the Cronbach's Alpha coefficient, with values of 0.89, 0.87, and 0.94, respectively.

***Ethical approval**:* The research was approved by Human Research Ethics Committee, Suan Sunandha Rajabhat University, COA. 1-006/2023.

Statistical analysis: Statistical analyses were conducted using SPSS (SPSS Inc., Chicago, IL, USA) software for Windows. Descriptive statistics were used to analyze the general information of the sample, perceptions of using the emergency medical service system, attitude towards the emergency medical service system, and expectations towards the emergency medical service system, i.e., frequency, percentage, median, arithmetic mean (M), and standard deviation (S.D.). Linear regression was used to analyze the relationships between perception, attitude, and expectation towards the emergency medical service system. For statistical tests, the significance level was set at 0.05.

RESULTS

General information

Research participants consisted of 491 people aged 20 years and above who live in Samut Songkhram province. Most of them were women (67.4%), with a mean age of 46 years (S.D.= 16.54), were married (43.0%), finished junior high school education (33.0%), employed in general occupations (22.6%), were aware of the emergency number 1669 (hotline) (96.3%), and knew about the local rescue or emergency ambulance service (91.4%). Most of them knew Thai EMS 1669 or the ambulance service from social media (17.3%) (Table1).

Table 1. Demographic variables of participants. (n=491)

Demographic variables	n (%)
1. Gender	
Male	160 (32.6)
Female	331 (67.4)
2. Age (years) [Mean±SD]	45.92±16.54
3. Marital status	
Single	208 (42.4)
Married	211 (43.0)
Separated	26 (5.3)
Divorce/Widowed	46 (9.4)
4. Education	
Unlettered	4 (0.8)
Graduate	487 (99.2)
Primary	90 (18.3)
Secondary	162 (33.0)
Certificate	18 (3.7)
Diploma	44 (9.0)
Bachelor	159 (32.4)
Master	14 (2.9)
5. Occupation	
Unemployment	133 (27.1)
Retired	33 (24.8)
Housewife	56 (42.1)
Student	44 (33.1)
Employment	358 (72.5)
Trade	71 (19.8)
General Employment	81 (22.6)
Self-Employed	53 (14.8)
Agriculture	38 (10.6)
Government Official	66 (18.4)
University Employee	20 (5.6)
State Enterprise Employee	5 (1.4)
Company Employee	24 (6.7)
6. Knew emergency number 1669 (hotline)	
No	18 (3.7)
Yes	473 (96.3)
7. Know about the local rescue or emergency ambulance service.	
Don’t know	42 (8.6)
Know	449 (91.4)
8. Channels to access emergency services 1669 or ambulance.	
Radio	14 (2.9)
Television	56 (11.4)
Folders/Leaflet	19 (3.9)
Signboard	60 (12.2)
Social Media	85 (17.3)

Demographic variables	n (%)
Relatives	29 (5.9)
Medical orderly	61 (12.4)
Ever seen an emergency ambulance service	79 (16.1)
Village Health Volunteers	38 (7.7)
Rescuer	17 (3.5)
Emergency patient	7 (1.4)
Rescue Volunteer	22 (4.5)
Others	4 (0.8)

Participants' perception of the use of emergency medical services

Most participants had an overall perception of the use of emergency medical services at a good level (M = 2.46, SD. 0.27) . Consideration of each dimension found that perception of information gathering, perception of telephone number, and perception of speed (M = 2.47, SD. 0.38) , perception of emergency medical services and expenses (M = 2.59, SD. 0.40), and perception of preliminary medical assistance during the process of patient transfer (M = 2.53, SD. 0.35) were at a good level. However, perception of the use of emergency medical services was at a moderate level, i.e., perception of service areas (M = 2.27, SD. 0.37), as shown in (Table 2).

Participants' attitude towards emergency medical service system

Most participants had a good overall level of attitude toward the emergency medical service system (M = 2.40, SD. 0.23). Consideration of each dimension found that attitude toward the operations of healthcare personnel (M = 2.54, SD. 0.34) and attitude toward emergency medical service expenses (M = 2.74, SD. 0.33) were at a good level, while attitude toward the safety in transferring patients (M = 2.23, SD. 0.35) and attitude toward information gathering (M = 2.12, SD. 0.33) were at a moderate level, as shown in (Table 2).

Participants' expectation towards emergency medical service system

Most participants had a high overall level of expectation toward the emergency medical service system (M = 2.85, SD. 0.25) . Consideration of each dimension found expectation toward services provided (M = 2.83, SD. 0.29), expectation toward personnel (M = 2.75, SD. 0.34) and expectation toward information gathering, materials and equipment (M = 2.85, SD. 0.26) were at a high level, as seen in (Table 2).

Table 2 Level of perception, attitude and expectation towards emergency medical service system in participants (n=491).

Variables	M	SD	Level
1. Perception the use of emergency medical services	**2.46**	**0.27**	**Good**
1.1 Perception of information gathering, perception of telephone number and perception of speed	2.47	0.38	Good
1.2 Perception of emergency medical services and expenses	2.59	0.40	Good
1.3 Perception of service areas	2.27	0.37	Moderate
1.4 Perception of preliminary medical assistance during the process of patient transfer	2.53	0.35	Good

Variables	M	SD	Level
2. Attitude towards emergency medical service system	**2.40**	**0.23**	**Good**
2.1 Attitude towards the safety in transferring patients	2.23	0.35	Moderate
2.2 Attitude towards the operations of healthcare personnel	2.54	0.34	Good
2.3 Attitude towards information gathering	2.12	0.33	Moderate
2.4 Attitude towards emergency medical service expenses	2.74	0.33	Good
3. Expectation towards emergency medical service system	**2.82**	**0.25**	**High**
3.1 Expectation towards services provided	2.83	0.29	High
3.2 Expectation towards personnel	2.75	0.34	High
3.3 Expectation towards information gathering, materials and equipment	2.85	0.26	High

The relationship between perception, attitude and expectation towards emergency medical service system

The linear regression analysis was used to investigate how perceptions of the use of emergency medical services and attitudes toward the emergency medical service system were related to positive expectations toward the emergency medical service system. For the univariate linear regression and multiple linear regression analysis, it was found that perceptions of the use of emergency medical services (β = 0.290) and attitudes toward the emergency medical service system (β = 0.272) were statistically significantly related to positive expectations toward the emergency medical service system. These two variables contribute to a predictive accuracy of 23 percent for expectations toward the emergency medical service system, as seen in (Table 3).

Table 3. Relationship between perception, attitude and expectation towards emergency medical service system using linear regression.

Model	Factor	Unstandardized coefficients		Standardized coefficients	95% CI for B	P-value
		B	SE	Beta		
Bivariate	Perception the use of emergency medical services (Scores)	0.378	0.038	0.412	0.303-0.452	0.00*
	Attitude towards emergency medical service system (Scores)	0.423	0.044	0.402	0.337-0.509	0.00*
Multivariate	Perception the use of emergency medical	0.265	0.410	0.290	0.185-0.345	0.00*

Model	Factor	Unstandardized coefficients		Standardized coefficients	95% CI for B	P-value
		B	SE	Beta		
	services (Scores)					
	Attitude towards emergency medical service system (Scores)	0.286	0.470	0.272	0.194-0.378	0.00*

**Significant at the 0.05 level (2-tailed), $R^2 = 0.23$*

DISCUSSION

According to the study on perception, attitude, and expectation among people towards the emergency medical service system in Samut Songkhram province, the findings can be summarized as follows:

The study results found that participants' perception of the use of emergency medical services was at a good level (M = 2.46, SD. 0.27). It was possible that people learned about the emergency medical service system from different media, such as social media, posters, or public relations signs, or they received information from persons having experience in using the emergency medical service system. Perception is a cognitive process that makes it possible to interpret the surroundings with the stimuli that people receive through sensory organs, which can be changed and increased at all times, consistent with previous studies[16] as it was found that the overall perception of emergency medical services was at a high level (M = 4.34, SD. 0.71). A study conducted by Supannawadee Pinyo et al. on perceptions and expectations towards emergency medical services among patients and their relatives in Phetchaburi province indicated that research participants' perception of emergency medical services was at a good level, 41.0%.[7] However, there are study results that go against this perception of the use of emergency medical services as the perception was evaluated at a moderate level since people could not access the emergency medical service system. The major causes were the characteristics of public relations performed by public health agencies that did not cover all areas and people did not pay attention to the emergency medical service system.[10]

With regard to attitudes toward the emergency medical service system, the study results revealed that research participants had a good level of attitude toward the emergency medical service system (M = 2.40, SD. 0.23) since they received positive information, positive shared experiences, and perceived safety and other associated benefits. Attitudes can be formed by receiving different information or experiences, generating some form of inclination. Individuals with a positive experience, based on their own experiences or experiences shared by other people, may develop an inclination in one direction or the other. The study results in this research are consistent with previous studies[17] in finding that the overall attitude toward the emergency medical service system was at a good level (M = 3.57, SD = 0.36). Nonetheless, some study results go against that view of people's attitude towards emergency medical services, with evaluations at a moderate level.[9]

In relation to expectations toward the emergency medical service system, the study results indicated that research

participants had a high level of expectation toward the emergency medical service system (M = 2.85, SD. 0.25) since they expected that the emergency medical service system would provide convenience, early detection, early reporting, early response, on scene care, care in transit, and transfer to definitive care in a safe and timely manner. This is consistent with a study conducted by Surapa Khunthongkaew (2019) on the factors associated with the use of emergency medical services by people in Ratchaburi province, as it was found that patients had a high level of expectation toward emergency medical services.[16] A previous study also found that[10] research participants had a high level of expectation toward the emergency medical service system (M = 2.64, SD = 0.34).

The analysis of the use of emergency medical services and expectations toward the emergency medical service system revealed that the perception of the use of emergency medical services and attitude towards the emergency medical service system showed positive correlation with expectation towards the emergency medical service system, with statistical significance (p-value < 0.05). It can be explained that perception plays a part in driving people in Samut Songkhram province to express their behavior in accordance with the Health Belief Model (HBM).[13] It is believed that individuals will follow instructions or advice to prevent and manage a specific problem and will be aware of, perceive, and expect the outcomes by considering the anticipated benefits they will receive.[15] Therefore, based on such a belief model, if people have increased perception of the use of emergency medical services, which may come from public relations activities performed by relevant agencies such as the National Institute for Emergency Medicine or the Provincial Public Health Emergency Office, in a comprehensive manner, they will be able to receive benefits from the emergency medical service system with convenience, safety, and acceptable standards in the services provided.[18-19] However, there are some limitations of the study as the research was conducted only in Samut Songkhram province. The areas studied in future research should be expanded. The study results are consistent with those of a previous study showing[8] that perceptions of the use of emergency medical services were significantly associated with the choice to use emergency medical services (p-value < 0.01). With reference to attitude and expectation toward the emergency medical service system, attitude was positively related to expectation with statistical significance (p-value < 0.05).[13] It can be explained that people's attitude is shaped by learning how to respond to a change in feelings or expectations toward the emergency medical service system in a better way; for example, service users feel that calling the emergency medical services is the safest way when an emergency occurs and they expect that healthcare personnel have the knowledge and ability to provide on scene care safely.[20-21] The study results are consistent with the result of a previous study[19] that found that attitudes about the emergency medical service system were positively related to expectation with statistical significance (p-value < 0.01).

RECOMMENDATIONS

The study results are greatly beneficial for making operational plans and developing the emergency medical service system to enable people to perceive the benefits, and to understand and access the emergency medical service system correctly, appropriately, and efficiently. The research results shall lead to the development of a public relations plan for

the emergency medical service system, providing people with information about calling the hotline 1669 accordingly. Furthermore, the data obtained from this research can be utilized to improve the service system, establish a community network, and enhance communication and public relations services. Nevertheless, in future research, it will be essential to study the participation of the healthcare network in developing the emergency medical service system in Samut Songkhram province.

ACKNOWLEDGMENTS

The researcher would like to thank the Institute of Research and Development, Suan Sunandha Rajabhat University, for granting the research supporting fund and the people in Samut Songkhram province who provided data for this research.

FUNDING

This research project was supported by the Institute of Research and Development, Suan Sunandha Rajabhat University (11706/2566).

REFERENCE

1. Strategy and Planning Division. Summary of sickness report 2020 [Internet]. Nonthaburi: Office of the Permanent Secretary Ministry of Public Health; 2020 [cited 2022 Nov 23]. Available from: https://bps.moph.go.th/
2. World Health Organization. Noncommunicable diseases [Internet]. Geneva: United Nations agency; 2021 [cited 2022 Nov 23]. Available from: https://www.who.int/health-topics/noncommunicable-diseases#tab=tab_1
3. SukPhaibun U, et al. The satisfaction of clients toward emergency medical service system of Rangsit City Municipal, Pathumthani Province. JNMC. 2016;4(1): 417-25.
4. National Institute for Emergency Medicine. Situations and Trends in Health and Emergency Medicine (Global and Thailand) [Internet]. Nonthaburi: Ministry of Public Health; 2022 [cited 2022 Dec 2]. Available from: https://www.niems.go.th/1/UploadAttachFile/2022/EBook/414764_20220208161448.pdf
5. Sirisamutr T, Doungthipsirikul S, Chuensamrong P, Wachiradilok P. Research report: Research to Development the quality of the emergency medical service system to the new normal (EMS New Normal) [Internet]. Nonthaburi: National Institute for Emergency Medicine; 2022 [cited 2022 Dec 5]. Available from: https://www.niems.go.th/1/UploadAttachFile/2022/EBook/416748_20221108154200.pdf
6. Department of Health. Health Population Database [Internet]. Nonthaburi: Ministry of Public Health; 2023 [cited 2023 Jan 10]. Available from: http://dashboard.anamai.moph.go.th/population/popall/changwat?year=2023&cw=75
7. HDC dashboard Samut Songkhram Provincial Health Office. Accidents and emergency prevention and emergency medical services operation situation report Samut Songkhram Province [Internet]. Samut Songkhram: Samut Songkhram Provincial Health Office; 2023 [cited 2023 Jan 10]. Available from: https://skm.hdc.moph.go.th/hdc/main/index.php
8. Venesoja A, Castrén M, Tella S, Lindström V. Patients' perceptions of safety in emergency medical services: an interview study. BMJ Open. 2020;10(10):e037488. doi: 10.1136/bmjopen-2020-037488.
9. Surachit C. Perception and expectation of Emergency Medical Service Paknamlangsuan Hospital, Chumphon Province. Reg11med. 2017;31(2):271-8.

10. Phianpailoon P. Knowledge, attitude, and expectations of people toward emergency medical services in areas covered by Samkok Community Hospital [dissertation]. Pathum Thani: Thammasat University; 2019.
11. Klepacka M, Bakalarski P. Trust of society towards selected medical professions – doctors, nurses, paramedics. Crit.nCare Innov. 2018;1(8):1-10. doi: 10.32114/CCI.2018.1.2.1.10
12. Pochaisan O, Pattanarattanamolee R, Pongphuttha W, Chadbunchachai W, Nakahara S. Development of an emergency medical services system in Thailand: Roles of the universal health coverage and the national lead agency. Emerg Med Australas. 2021;33(4):756-8. doi: 10.1111/1742-6723.13794
13. Songsin N, Boonchieng W, Intawong K. The relationships between perception, attitudes, and expectations of monks on the use of emergency service systems in Chiang Mai Province. JHR. 2021;15(1):119-30.
14. Cochran WG. Sample Techniques. New York: McGraw-Hill Book; 1985. p. 31.
15. Sirisamutr T, Ponsen K, Wachiradilok O. Knowledge, perspective, and reasons of not-calling emergency medical services in Thailand. JHSR. 2018;12(4):68-80.
16. Khuntongkaew S. The study of Factors Related to Use Emergency Medical Services, Ratchaburi Province. JPCN. 2019;2(1):30-44.
17. Jatawatana W. Attitude of village Health Volunteer about Emergency Medical Service Case Study: Namomdistri, Songkhla Province. Maharaj Nakhon Si Thammarat Med J. 2021;4(2):41-52.
18. Songsin N, Boonchieng W. Problems and Obstacle to the Use of Emergency Service Systems of Monks in Northern Provinces of Thailand. HCU J. 2021;25(2):247-57.
19. Armatpundit T. Factors Influencing Utilization of Emergency Medical Service of Severity and Critical Illness Patients in Ubonrathchathani Province. JHS. 2017; 26(5):884-95.
20. Møller TP, Jensen HG, Viereck S, Lippert F, Østergaaard D. Medical dispatchers' perception of the interaction with the caller during emergency calls - a qualitative study. Scand J Trauma Resusc Emerg Med. 2021;29(1):45. doi: 10.1186/s13049-021-00860-y.
21. AlRazeeni DM. Knowledge and Attitude of Saudi Emergency Medical Services Students Regarding Pain Management: A Cross-Sectional Study. Inquiry. 2021;58:469580211056043. doi: 10.1177/00469580211056043