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Patients' Discharge Information Needs Regarding Acute Coronary Syndrome in Teaching Hospital

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Abstract

***Background:** Hospital discharge can be hazardous because discontinuity of care will increase the risks to the patient. By providing the customized discharge information, patients are able to have better understanding of their health conditions and enhance their self-management at home.*

Objective: This study was conducted to determine the patients' discharge information needs regarding acute coronary syndrome (ACS) and the relationship between demographic data as well as health-related characteristics with the patients' discharge information needs among the ACS patients.

***Methods:** This is a descriptive cross-sectional study conducted among 114 participants in the tertiary teaching hospital in Kuala Lumpur. The convenience sampling was used in this study. The assessment tool consists of the Cardiac Patient Learning Needs Inventory (CPLNI) and data was analysed using SPSS version 23.0 for Windows.*

***The results:** The findings revealed that the discharge information needs regarding ACS was rated as high level with the total mean score of 4.25. Medication was rated as the most important discharge information ($\bar{x}$=4.50), followed by structure and functions of the heart ($\bar{x}$=4.43) as well as symptom management ($\bar{x}$=4.37). All the demographic data did not have a significant relationship with patients' discharge information needs except race. There was also no significant relationship between health-related characteristics and patients' discharge information needs.*

***Conclusion:** The finding of this study, nurses should have assessed the patients' information needs prior to giving discharge information that tailored to patient's needs.*

Keywords: *acute coronary syndrome; discharge information; health education prior to discharge.*

Introduction

In Malaysia, coronary artery disease (CAD) accounted for 29,400 deaths (20.1%) of all deaths in 2012 and the 30-day mortality rate had been constant at around 9% from the year 2011 to 2013 [1,2]. Additionally, acute coronary syndrome (ACS) encompasses a spectrum of unstable CAD including unstable angina and myocardial infarction [3]. The previous research found that the total cases of hospitalization due to heart attack or chest pain event was 150,000 each year which indicated an admission happened in an average of four minutes [4]. Indeed, there were 34.3% of patients with ACS had at least one hospital readmission within 30 days and reaching 61.7% within one year of discharge [5]. The high readmission

rate had significant negative impact in the clinical areas as well as unnecessary hospital re-admissions also caused ACS patients to have more considerable suffering, harm and extra cost [6,7]. Appropriate discharge information should be given to the patients and caregivers so that they can cope with the gap and care for themselves at home [8].

Discharge information is vital for management of patients with acute coronary syndrome (ACS) as it can promote their recovery after discharge. Effective provision of appropriate information before discharge is associated with successful self-management at home, increased patients' satisfaction, and reduced avoidable hospital readmissions [8,9.10,11]. However, unmet information needs were common among patients with ACS [12, 13]. Out of concern, 31.6% patients reported to have poor perception regarding explanation and information received [14]. Therefore, patient had little knowledge of the cardiac disease and the coping strategies which are necessary to manage their disease [15].

Previous studies showed that older patients were reported for more information needs as compared to younger patients [16,17]. However, in the study conducted in Bangladesh, patients who were less than 60 years old responded their higher level of discharge information needs compared with those more than 60 years old [8]. These inconsistent findings may be due to the different countries of the studies. As for gender difference, women tend to be more attentive to their health. This possibility occurs might be due to those women made much more use of health services than men did [18]. The finding in previous study showed that Indians desired more information during their discharge as they had limited knowledge of cardiovascular disease [19]. In addition patients' discharge information needs are associated with unemployed, socio-economic status and patients' educational levels [20]. Moreover, a recent study found that the individual with low socio-economic status had the higher risk for cardiovascular events [21]. With today's shorter lengths of stay and higher acuity patient encounters, there is insufficient time to provide needed education [22]. As a result, information was delivered in a rushed, last minute method without tailored to patients' needs [9]. The quality and effectiveness of information provision regarding ACS were compromised when the health care providers do not perceived the patients' needs correctly [20]. Furthermore, the patients' perceptions of important information may be different from that of the healthcare members providing the education.

There were many studies using questionnaire to investigate patients' information needs regarding myocardial infarction (MI) which was one of the ACS categories [13,16,23]. Nonetheless, most of the studies were limited to patients with myocardial infarction only whereas, some studies involved patients who were just admitted to hospital and had not completed medical treatment yet [13,16,23]. The findings in those studies may not be able to generalize in patients with ACS whom are prior to discharge. At the time of the present study, there were only limited studies done on the patients' discharge information needs regarding ACS which included both unstable angina and myocardial infarction. Therefore, this descriptive and quantitative study was conducted in a form of cross-sectional design to identify the patients' discharge information needs regarding ACS. This study also determine the relationship between demographic data and patients' discharge information needs as well as the relationship between health-related characteristics and patients' discharge information needs.

Material and Method

Design and Setting

A descriptive cross-sectional study was conducted in teaching hospital to determine the patients' discharge information needs regarding ACS and the relationship between demographic data as well as health-related characteristics with the patients' discharge information needs among the ACS patients. A cross-sectional design was chosen because it can be conducted relatively faster with lower cost [35]. The data were collected at the cardiology discipline (Coronary Care Unit, Coronary Rehabilitation Ward and cardiology ward) in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). The UKMMC is a tertiary teaching hospital situated in Cheras, Kuala Lumpur, Malaysia.

Population and Sampling Method

In this study, a convenience sampling method was used. By using Krejcie and Morgan formula with an accepted margin of error of 5% with 95% confidence interval, the sample size required for this study was 157 participants. The inclusion and exclusion criteria

were listed in order to ensure a homogenous sample. Eligible participants were selected based on the inclusion criteria which included 18 years old and above, able to understand, read and write in Malay or English. Those who were diagnosed with mental problems, deaf or blind and have complications of ACS were excluded from this study. In this study, the response rate was 72.6% (114).

Data Collection Method and Study Instrument

In this study, the questionnaire that used for data collection consisted of three parts which are Part A, Part B and Part C. Part A is about demographic data which contained information regarding age, gender, race, marital status, educational level, and employment status. Part B is about health-related characteristics which contained information regarding types of ACS, length of stay, prior admission due to ACS, and prior health education by cardiac rehabilitation nurse. This part of questions was filled by the researchers themselves. This information was retrieved from the medical records in order to obtain more accurate data. Questions in Part C were modified based on the Cardiac Patient Learning Needs Inventory (CPLNI) developed by Gerard and Peterson (1984) to better fit the Malaysian population. The modified CPLNI comprised of 8 categories with 37 items that rated based on a five-point Likert-type scale, including 1= not important, 2= less important, 3 = not sure, 4 = important, and 5 = very important. It was specifically designed to determine patients' level of discharge information needs regarding ACS [24]. Modifications involved the replacement of the category 'anatomy and physiology' with 'structure and functions of the heart', removal of the category of introduction to the Coronary Care Unit (CCU) and six items from other categories that were not relevant to the current study including item 4 in psychological factors, item 1 in risk factors, item 5 in diet, items 1, 3 and 6 in other pertinent information. The category of other pertinent information was amended and divided into two new categories: symptom management and miscellaneous. Five items were newly generated in which four of the items were added into symptom management and one item was added into miscellaneous. Besides, all the items in the questionnaire were changed from questions into statements and some paraphrasing were done for better participants' understanding. The total mean scores of discharge information needs were calculated by summing the scores of all the items, then averaging by the total number of items. The total mean of discharge information needs for each category was also calculated using the same method. Therefore, the possible ranges of score were ranged from 1 to 5. The data was further categorized into three levels: low (1 - 2.33), moderate (2.34 - 3.66) and high (3.67 - 5.00). The higher the total mean score indicated a higher level of discharge information needs. The content validity of the modified CPLNI was reviewed by experts in cardiac and languages. The instrument was translated to Bahasa Malaysia. Finally, the back-to-back translation was done. The modified CPLNI have a good internal consistency with Cronbach alpha of 0.94.

Data Analysis

The data of the study was analysed using SPSS version 23.0 for Windows in accordance the purpose of the study and the characteristics of each variable with significant level of $p \leq 0.05$. Continuous data including age, length of stay and total mean score of discharge information needs was analysed using mean and standard deviation. The categorical data such as gender, race, marital status, level of educational, employment status, types of ACS, prior admission due to ACS, prior health education by cardiac rehabilitation nurse and categories of discharge information needs (low, moderate and high) were analysed using frequency and percentage. Pearson's correlation coefficient, Independent t-test, Kruskal-Wallis test, Spearman's rank order correlation and One-way analysis of variance (One-way ANOVA) were performed to identify the relationship between demographic data andpatients' discharge information needs regarding ACS as well as the relationship between health-related characteristics and patients' discharge information needs regarding ACS. All reported p-value were considerate statistically significant at $p \leq 0.05$.

Ethical Considerations

The study was approved by the Universiti Kebangsaan Malaysia Research Ethics Committee (UKMREC Project code: FF-2018-178). This research study was guided by the ethical principles of autonomy, beneficence, confidentiality and anonymity to ensure participants' rights were protected. The participants were informed about the aim and content of the study. If they agreed to participate in this research volunteering, they had to sign the provided form before filling in the questionnaire.

Results

Demographic Data

The results of demographic data were shown in Table 1. The mean age of the participants was 61.18 years old. Majority of the participants were male (67.5%; 77), Chinese (43.9%; 50) and married (91.2%; 104). In addition, most of the participants had secondary school qualification (48.2%; 55). Lastly, 83 participants (72.8%) were unemployed.

Table 1. *Demographic data of the respondents (n=114)*

Variables	n (%)	Mean ± SD
Age		61.78 ± 10.997
Gender		
Male	77 (67.5)	
Female	37 (32.5)	
Race		
Malay	47 (41.2)	
Chinese	50 (43.9)	
Indian	17 (14.9)	
Others	0 (0.0)	
Marital Status		
Single	10 (8.8)	
Married	104 (91.2)	
Educational Level		
None	4 (3.5)	
Primary school	33 (28.9)	
Secondary school	55 (48.2)	
STPM/ Diploma	15 (13.2)	
Degree and above	7 (6.1)	
Employment status		
Unemployed	83 (72.8)	
Employed	31 (27.2)	

Note: n = number of participant; & = percentage; SD = standard deviation

Health-Related Characteristics

In Table 2, the result of health-related characteristics showed that most of the participants were admitted due to USA (53.5%; 61). The average length of stay of was around 3 days. Many participants had experience of prior admission due to ACS (68.4%; 78). Only 39.5% (45) of participants had been attended by cardiac rehabilitation nurses.

Table 2. *Health-related characteristics among ACS patients (n=114)*

Variable	n (%)	Mean ± SD
Length of stay (days)		3.09 ± 0.858
Types of ACS		
USA	61 (53.5)	
NSTEMI	43 (37.7)	
STEMI	10 (8.8)	
Prior admission due to ACS		
Yes	78 (68.4)	
No	36 (31.6)	
Prior health education by cardiac rehabilitation nurse		
Yes	45 (39.5)	
No	69 (60.5)	

Note: n = number of participant; & = percentage; SD = standard deviation

Patients' Discharge Information Needs

The total mean score of discharge information needs regarding ACS was 4.25 with the score ranged from 2.59 to 5. The majority of the participants (86.8%; 99) rated the discharge information needs as highly important. Only 15 (13.2%) participants rated it as the moderate level. None of the participants had low level of discharge information needs. All categories of discharge information needs were rated at high level of category. According to the results in Table 3, medication ($\bar{x}$=4.50, SD=0.61) was rated as the most important discharge information, followed by structure and functions of the heart ($\bar{x}$=4.43, SD=0.55) as well as symptom management ($\bar{x}$=4.37, SD=0.59). Information regarding physical activity ($\bar{x}$=3.83, SD=0.81) was rated as the lowest among the eight categories.

Table 3. *Patients' discharge information needs for each category (n=114)*

Category	Mean ± SD	Level of discharge information needs
Structure and functions of the heart	4.43 ± 0.55	High
Psychological factors	3.98 ± 0.74	High
Risk Factors	4.36 ± 0.70	High
Medication	4.50 ± 0.61	High
Diet	4.31 ± 0.63	High
Physical activity	3.83 ± 0.81	High
Symptom management	4.37 ± 0.59	High
Miscellaneous	4.23 ± 0.63	High

Note: SD = standard deviation

Relationship Between Demographic Data and Patients' Discharge Information Needs

Among all the variables of demographic data, only race had statistically significant relationship with patients' discharge information needs (p<0.05). Based on the results in Table 4, there was no statistically significant relationship between age and patients' discharge information needs (p=0.36). This study found that female had higher discharge information needs than male, the relationship between gender and patients' discharge information needs was not statistically significant (p=0.18). There was statistically significant difference in mean score across the three races (p=0.01). The post-hoc test showed that Chinese had lower discharge information needs than Indians with mean difference of -0.37 (p=0.02). Single participants desired more discharge information needs but marital status did not have statistically significant relationship with patients' discharge information needs (p=0.82). Highly educated participants who had qualification of degree and above requested more discharge information needs but the result showed that level of education did not have statistically significant relationship with patients' discharge information needs (p=0.11). The relationship between employment status and patients' discharge information needs revealed that unemployed participants had lower discharge information needs but this relationship also was not statistically significant (p=0.12).

Table 4. *Relationship between demographic data and patients' discharge information needs (n=114)*

Variable	Patients' discharge information needs		
	Mean/Mean Rank	Statistical value	p-value
Age		-0.09[a]	0.36
Gender		-1.34[b]	0.18
Male	4.21		
Female	4.34		
Race		4.47[c]	0.01*
Malay	4.31		
Chinese	4.12		
Indian	4.49		
Others	0.00		
Marital Status		0.23[b]	0.82
Single	4.289		
Married	4.252		
Level of education		7.54[d]	0.11
None	45.75		
Primary school	48.39		
Secondary school	59.85		
STPM/ Diploma	60.20		
Degree and above	82.93		
Employment status		1.58[b]	0.12
Unemployed	4.37		
Employed	4.21		

*Note: aPearson correlation's coefficient; bIndependent t-test; cOne-way ANOVA; dKruskal-Wallis test; *p value <0.05 significant difference*

Relationship Between Health-Related Characteristics and Patients' Discharge Information Needs

Besides that, the results in Table 5 also found that the relationship between health-related characteristics with patients' discharge information needswas not statistically significant. Participants with USA had higher discharge information needs than other participants. The relationship between types of ACS and patients' discharge information needswas not statistically significant (p=0.74). The short average length of stay showed no significant relationship with patients' discharge information needs (p=0.28).

Participants who were previously admitted due to ACS had lower discharge information needs but prior admission due to ACS also did not have statistically significant relationship with patients' discharge information needs (p=0.72). Many participants who did not receive any health education by cardiac rehabilitation nurse reported of high discharge information needs but the relationship between prior health education by cardiac rehabilitation nurse and patients' discharge information needs was not statistically significant in this study (p=0.35).

Table 5. *Relationship between health-related characteristics and patients' discharge information needs (n=114)*

Variable	Patients' discharge information needs		
	Mean	Statistical value	p-value
Length of stay (days)		0.10[a]	0.28
Types of ACS		0.31[b]	0.74
USA	4.29		
NSTEMI	4.22		
STEMI	4.20		
Prior admission due to ACS		-0.36[c]	0.72
Yes	4.24		
No	4.28		
Prior health education by cardiac rehabilitation nurse		-0.94[a]	0.35
Yes	4.20		
No	4.29		

Note: aSpearman's rank; bOne-way ANOVA; cIndependent t-test

Discussion

In this study, majority of the participants rated the discharge information needs as highly important. This finding is similar to the previous studies [8,25]. These consistent findings may indicate that most of the ACS patients are having high awareness towards the importance of receiving discharge information related to their disease and health conditions. From the findings, medication was rated as the most important discharge information, followed by structure and function of heart as well as symptom management. Meanwhile, the least discharge information needed by the patients was physical activity. In many of the previous studies, medication was ranked in one of the top three categories of information needs [8,25]. This is because the correct understanding and use of medications are very important to ensure patients' safety. Unfortunately, a report done by Kumar et al. (2017) showed that the level of knowledge regarding medication among public was low [27]. Thus, the consistent findings may reflect the patients' awareness of the need to be knowledgeable about actions and side effects as patients have to attend to their own medicines after discharge.

Structure and functions of the heart was not considered as an important area of concern in previous studies [8, 25]. Surprisingly, this category ranked second in the present study as well as the study conducted in Turkey [23]. This finding may indicate that patients of Malaysia are more favour for information on disease progress and how the heart damaged due to ACS. Furthermore, most of the participants in this study had only secondary school qualifications with little knowledge on the anatomy and physiology aspects. Therefore, they may desire to receive more information regarding structure and functions of the heart.

Apart from that, symptom management ranked as the third important category of discharge information. A similar result was showed by previous studies [8,23,25]. Through the findings, the result may indicate that patients appear to prioritise information that is vital to their survival and ongoing control of the symptoms [25]. Hence, they may want to have more information on symptoms management once discharge home. Meanwhile, physical activity was ranked as the least important discharge information. This result was strongly supported by the previous studies [8,23,25]. Poor information needs regarding physical activity may indicate that patients were not aware of the importance of being physically active [25]. As the participants involved in this study were mostly elderly people whom aged 60 years old and above, many of them may have some physical limitation and changes due to aging that lead to physically inactive. Moreover, the previous study conducted in Malaysia stated that only 11% to 15% of adults in Malaysia were physically active [26].

From the findings of this study, there was no significant relationship between age and patients' discharge information needs. Previous studies revealed inconsistent findings in which most of them found that older patients reported of higher information

needs as compared to younger patients [16,25]. In contrast, the study done in Bangladesh showed that the younger patients requested for more information than the elder group [8]. However, the younger patients are more aware of the dangerous role of distress for health and experience a deeper burden related to the disease in comparison with older patients [20]. These inconsistent findings may be due to involvement of different age population. Besides that, there was also no significant difference between gender and patients' discharge information needs. This result was contrasted with many previous studies [8,20,28]. These studies found that female desired to have more information than male. Women were more attentive to their health as they made much more use of health service [18]. However, the information needs among male and female did not show any uniform and consistent pattern [29].

In this study, race was the only variable that had significant relationship with patients' discharge information needs. However, it was contrasted with a report done by Galarce et al. (2011) [30]. The result of post hoc test showed that Indian had higher level of information needs than Chinese. According to Amin et al. (2014), they found that Indians had limited knowledge of cardiovascular disease compared to Chinese [19]. Insufficient knowledge may cause them to have more awareness and desire to receive information after an ACS event. Nevertheless, the small sample size of Indians in the current study prevents the assertiveness of these findings.

On the other hand, marital status was found not significantly associated with patients' discharge information needs. This finding was similar with the study done by Sultana et al. (2015) in Bangladesh [8]. In contrary, married patients desired a higher information needs than those who were single [20]. The study mentioned that patients' partners usually do not participate in the educational programs offered by hospitals. Hence, patients may feel that their spouses were incapable of providing optimal support to them which lead to high information requirements.

In the current study, the findings revealed that level of education was not statistically related to the patients' discharge information needs. This finding is consistent with the previous studies conducted by Sultana et al. (2015) in Bangladesh [8] and Lima et al. (2014) [31]. Nonetheless, there was a study showed that patients' education level was significantly associated with information needs only at the beginning of the disease [20]. Greco et al. (2016) also stated that highly educated patients may want to have greater knowledge about the treatment as well as a greater understanding of their crucial role in the disease management [20]. Lastly, the present study showed no significant difference in between the employment status and patients' discharge information needs. From the earlier study, it was reported that retired people desired more information than employed people [16]. However, a study conducted in Korea found that employed participants had significantly higher learning needs than unemployed participants [32]. These inconsistent findings may be due cultural differences between Western and Asia country.

As for the health-related characteristics, there was no significant difference found between the types of ACS and patients' discharge information needs. Based on the previous study, types of ACS were found to be significantly correlated to the patients' discharge information needs [33]. The study showed that patients with MI reported to have more information needs. According to researcher, MI can lead to higher risk of developing heart failure and sudden death [3]. Therefore, the finding reported by Polikandrioti et al (2015) could be due to the risk of complication as it may affect the patients' perception on the severity of disease [33]. Furthermore, the finding of this study also showed no significant relationship between length of stay and patients' discharge information needs. There were very limited studies that related the two variables. A previous study found that patients' information needs changed over the time [16]. The average length of stay in this present study was about three days only. Therefore, it may indicate that short duration of period does not affect the patients' information needs significantly.

Prior admission due to ACS was found to be not significantly related with patients' discharge information needs. However, this finding was controversial with the previous study [8,34]. These studies found that patient who admitted previously due to ACS had lower discharge information needs. It may indicate that the patients have received sufficient information from the healthcare providers during their previous admissions. Similarly, there was no significant relationship between prior health education by cardiac rehabilitation nurse and patients'

discharge information needs. To the best of the researchers' knowledge, there was limited research done on this relationship. Nevertheless, there was a study found that the information given during cardiac rehabilitation program was standardized, rather than being tailored to meet the patient's individual needs [13]. This finding suggested that patients may require more information based on their needs before discharge home.

Strength of Study and Limitation

To the best of researchers' knowledge, the current study is found to broaden our knowledge towards patient's learning needs regarding ACS. This study had own strength which it's provide valuable information that can be used as the guidelines in giving health education to the patients with ACS. As the important information perceived by patients has been identified, this allows the nurses to focus on these areas during the educational process which could lead to more favourable outcomes for the patients.

Despite this strength, this study has some limitations that should be mentioned to facilitate the proper understanding of the study outcomes. Firstly, a convenience sampling used in this study may cause sampling bias and the sample is not representative of the entire population. Apart from that, cross-sectional design that used in the study was not able to derive the causal relationships between the variables. On the other hand, self-administered questionnaire resulted in response bias as the participants tended to give answers that are socially acceptable.

Recommendation

This study used quantitative research method which involved structured questionnaire with closed-ended questions. Instead of using quantitative research design, qualitative research can be recommended in the future study. A longitudinal study is also recommended to understand the long-term effects of changes in patients' discharge information needs. Furthermore, the future study is encouraged to develop an assessment tool based on Malaysian culture and lifestyle to better suit the local population.

Implication to Nursing Profession

As general, this study has its own implication to nursing profession. Based on the findings in this study, nurses should be aware that ACS patients have a high level of discharge information need. The key aspects of discharge information regarding ACS have been identified in this study. Therefore, the findings of this study can be referred by nurses because it helps to determine the important types of discharge information that tailored to ACS patients. In addition, the findings of this study can be used as a guideline to develop a systematic health education program in order to have a better outcome of discharge health education. This study also had implication to nursing education in which it's provided a clear picture of the direction for the future nursing education program. By applying the results of this study, the learning scope of nursing students and nurse can be specified and focused at the essential aspects. Moreover, throughout our readings, there is very limited nursing research that assesses patient's discharge information needs regarding ACS in Malaysia. Therefore, this study also can be used as a source of information and reference for the future research.

Conclusions

In this study, patients reported to have high information needs for all the categories in which medication was in the highest ranking followed by structure and functions of heart, symptom management, risk factors, diet, miscellaneous, and psychological factors. Surprisingly, information regarding physical activity was reported as the least important information. From the results, there was no relationship found between the demographics data and patients' discharge information needs, except race. Furthermore, there was also no significant relationship found between the health-related characteristics and patients' discharge information needs. Based on the finding of this study, it can help to provide essential information for an effective cardiac education plan that tailored to patient's needs.

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