ORIGINAL ARTICLE

Perceived Learning Needs Among Coronary Artery Disease Patients: A Study in a Tertiary Hospital

Suriani Yaacob[1], Noor Hanita Zaini[1], Khatijah Lim Abdullah[1], Nor Zehan Ahmad[1], Vimala Ramoo[1], Nazar Mohd Zabadi Mohd Azahar[2], Ahmad Fazli Abdul Aziz[3]

[1] Department of Nursing Science, Faculty of Medicine, University of Malaya, Malaysia.
[2] Department of Medical Laboratory Technology, Faculty of Health Sciences, Universiti Teknologi MARA, Malaysia.
[3] Department of Medicine, Faculty of Medicine and Health Sciences, University Putra Malaysia.

ABSTRACT

Introduction: Determination of learning needs is central for holistic patient education, to sustain behavior changes and to control patient's risk factor. However, patients often sense that their learning needs are unmet and information provided was too general. Thus, this study aimed to determine the perceived learning needs and their level of importance among Coronary Artery Disease (CAD) patients. **Methods:** The current investigation is a descriptive, cross-sectional study for which all CAD patients were selected using the cencus method. The data was collected using Cardiac Patients Learning Needs Inventory. The questionnaire was delivered to 140 CAD patients who had their follow-up in a cardiology clinic. The instrument is reliable with a Cronbach's alpha coefficient of 0.96. The study design followed STROBE cross-sectional design process guideline. **Results:** Participants' mean age was 58.96 ± 9.42 years. More than half of the participants were males (62.9%), employed (52.0%) and had attained secondary level education (69.3%). Around two-thirds (60.7%) of the patients perceived to have high learning needs. Gender and highest educational achievement were significantly associated with perceived learning needs. The most significant perceived learning needs were medication information, risk factors for CAD, information on diet, physical activity, anatomy and physiology, and other related information. **Conclusion:** This study has identified the important domains of learning needs among CAD patients. Findings from the present study will provide important input for future cardiac educational strategies to reduce the rate of hospital readmission and death.

Keywords: Learning Needs, Coronary Artery Disease, Cardiovascular Diseases

Corresponding Author:
Noor Hanita Zaini, MNSc
Email: noorhanita@um.edu.my
Tel: +6012-6270644

INTRODUCTION

Coronary artery disease (CAD) is one of the main causes of death globally as well as in Malaysia (1). The highest mortality rates from CAD are common in the Russian Federation and Ukraine with 654 and 718 deaths per 100,000 population respectively. In developed countries in Asia such as South Korea and Japan, the mortality rates are 36.5 and 47.0 deaths per 100,000 population respectively (2). CAD also the dominant cause of death in Malaysia. The mortality rate due to CAD is increasing and has reached 30,598 or 22.13% of total death in Malaysia (3). Diabetes mellitus, hyperlipidemia and hypertension are the major risk factors for cardiovascular diseases. The cost of treating patients with these risk factors are causing severe economic burden to many countries globally (4, 5, 6). Without disease management and intervention strategies such as medication and lifestyle changes, CAD is likely to recur. Non-compliance with

disease management has been revealed to be directly contributed to hospital re-admission (7, 8, 9). Therefore, patient education is one of the most effective method to improve patient's compliance with treatment, planning for care and disease management post-discharge, improving quality of life, increasing functional capacity to return to normal activities.

Patient education can be accomplished from identification and investigation of learning needs. Accordingly, patient's learning needs should be identified based on patient's condition and the period of hospitalization. Learning needs is the disparity between the learner's levels of knowledge with the levels of knowledge and skills required to perform a task. The importance of measuring learning needs among patients with CAD was emphasized in several studies (10, 11, 12). Providing health education is one of the essential parts of nursing care which aims to reduce the incidence of re-admission, complication and to enhance patient's self-care management, through patients' sense of security, self-control, trust, and involvement.

In order to have a better quality of health education, it

is important to understand patients' individual learning needs and learning styles prior to effective teaching as socio-demographic differences among the patients are known to influence patient learning needs (8, 13, 14). Evidently, patients from cardiology ward are often not prepared for hospital discharge and need more information on disease care and management during the recovery period (15). In the previous studies, the authors have reported unmet needs among patients in various clinical areas pertaining to disease care. Patients have reported that the information that given to them were not adequate (16). In a study conducted in Jordan, 20% of the patients in the Jordanian hospital were not satisfied with the information that they received while 60% of the respondents reported that information must be presented better (12). Healthcare providers tend to focus on the physiology of the disease rather than focusing on essential information on adaptations or lifestyle modification (17). Subsequently, poor adherence to medical advice and lack of motivation to sustain healthy lifestyles and healthy behaviors are the result of a mismatch in perceived learning needs among both patients and healthcare providers causes unmet patient needs (14). Identification of patients' learning needs is crucial to empower patients to practice healthy lifestyles through individualized self-management educational activities. Thus, it is essential to provide the education according to patient needs rather than a standardized form of education for all patients.

To achieve this, all healthcare providers must recognize the learning needs among CAD patients in Malaysia. Hence, the aim of this study was to determine the perceived learning needs and their levels of significance among CAD patients in a Malaysian tertiary hospital.

MATERIALS AND METHODS

Study design
This cross-sectional study was conducted among CAD patients in the Cardiology Clinic, University of Malaya, Malaysia. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used in this study.

Setting and participants
A total of 140 patients were participated in this study via random sampling method. Data collection was conducted between Mac and June 2016. Patients diagnosed with angina pectoris or myocardial infarction, able to read Malay or English and able to answer a self-administered questionnaire were included in this study. Meanwhile, patients diagnosed with multiple co-morbidities for example psychiatric illness, chronic kidney diseases and other chronic diseases were excluded from this study. The estimated number of CAD patient who came for follow-up in that cardiology clinic was 200. To calculate the sample, the researcher used

Roasoft calculator. The recommended sample size with a confidence level of 95% and margin 5% was 132.

Instrument
The 'Personal Information Form' was used to collect the patient characteristics while the "Modified Cardiac Patients Learning Needs Inventory" (CPLNI) was distributed to determine learning needs among CAD patients (18). The self-answered CPLNI questionnaire contains 36 items categorized into six domains (risk factors, anatomy and physiology, physical activity, diet, medication and other pertinent information). Each item equipped with a 5-point Likert Scale (ranging from 1=not important to 5=very important). The score was calculated for each completed questionnaire. A score of 120 or less indicates low learning needs; a score between 121 and 140 indicates moderate learning needs and a score more than 140 indicates high learning needs. Using back-to-back translation technique by language and health experts, the inventory was translated from English to Bahasa Malaysia to avoid misunderstandings or mistranslations of the questions. To ensure the quality and relevance of the questions, face validity was assessed by expert panels consisting of cardiologists and lecturers. The instrument has Cronbach's alpha of 0.96 and has good internal reliability (19, 20).

Data collection
Respondents were selected from cardiology clinic. Eligible respondents were approached after their condition is stable. The aim of this study was explained to each participant and a written consent was obtained prior to the study. The confidentiality of the data was assured. Respondents were provided with a code number. Respondent must read all the question and rank the order of importance of every topic. Before commencement of the study, respondents were informed about the study procedure. Participation in this study was purely voluntary and the participants can withdraw at any time without any untoward consequences.

Ethical consideration
Ethical approval was obtained prior to the study. This study was approved by the Ethics Committee of University of Malaya (MECID NO: 20145-188). Written and informed consent was obtained from all patients before enrolment.

Data analysis
The learning needs subscales were analyzed according to the rank perceived as important. Descriptive analyses were computed to explain the socio-demographic characteristics of the respondents such as age, race, gender, occupation and highest educational attainment. Chi square tests were performed to determine the association between socio-demographic characteristics and perceived learning needs. Data were analyzed using SPSS software version 24.0. A p-value <0.05 was

considered as statistical significance.

RESULTS

Socio-demographic Characteristics of CAD patients

There were 140 respondents participated in this study. More than half of the respondents were males (62.9%), employed (52.0%) and had attained secondary school education (69.3%) and about one third were Chinese (37.9%). The patients had a mean age of 58.96 ± 9.42 years. Table I depicts the socio-demographic data of the cardiac patients involved in this study.

Table I: Socio-demographic Characteristics of CAD Patients (N=140)

Variables		No. of respondents (n=140) n (%)
Age (mean ± SD)		58.96 ± 9.42
	Minimum	32
	Maximum	72
Gender	Male	88 (62.9)
	Female	52 (37.1)
Race	Malay	44 (31.4)
	Chinese	53 (37.9)
	Indian	43 (30.7)
Working status	Employed	73 (52.1)
	Unemployed	67 (47.9)
Educational level	Primary	30 (21.4)
	Secondary	97 (69.3)
	Tertiary	13 (9.3)

Rank of domains by CAD Patients' Perception

In general, 60.7% of respondents perceived that they had high learning needs following a cardiovascular intervention procedure, whereas 28.6% and 10.7% of respondents had moderate and low learning needs, respectively. Six domains relating to cardiac learning needs were assessed in this study. The domains ranked by the patients in order of importance were medication information (M=2.83, SD=0.42), risk factor (M=2.77, SD=0.49), diet information (M=2.42, SD=0.60), physical activity (M=2.26, SD=0.60), other relevant information (M=2.13, SD=0.53) and anatomy and physiology (M=1.89, SD=0.62) as shown in the Table II.

Table II: Rank of Domains by CAD Patients' Perception (N=140)

Domains	No. of respondents (n=140)		
	Rank	Mean	Standard Deviation (SD)
Anatomy and Physiology	6	1.89	0.62
Risk Factor	2	2.77	0.49
Medication Information	1	2.83	0.42
Diet Information	3	2.42	0.60
Physical Activity	4	2.26	0.60
Other Pertinent Information	5	2.13	0.53

Associations between Socio-demographic and Level of Learning Needs

Table III presented the results from analyses on

Table III: Associations between Socio-Demographic and Level of Learning Needs (N=140)

Variables	Learning Needs Score			Values	
	Least need for learning	Moderately need for learning	Highly need for learning	X	p-value
Sex				10.86	.004*
Male	9 (10.2%)	17 (19.3%)	62 (70.5%)		
Female	6 (11.5%)	23 (44.2%)	23 (44.2%)		
Ethnicity				5.32	.256
Malay	6 (11.3%)	11 (25.0%)	27 (50.9%)		
Chinese	6 (13.6%)	20 (37.7%)	27 (61.4%)		
Indian	3 (7.0%)	9 (20.9%)	31 (72.1%)		
Educational Level				43.00	<.001**
Primary	12 (40.0%)	12 (40.0%)	6 (20.0%)		
Secondary	3 (3.1%)	24 (24.7%)	70 (72.2%)		
Tertiary	0 (.0%)	4 (30.8%)	9 (69.2%)		
Occupational Status				3.50	.173
Employee	5 (6.8%)	19 (26.0%)	49 (67.1%)		
Unemployed	10 (14.9%)	21 (31.3%)	36 (53.7%)		

* Significant at $p<.05$
** Significant at $p<.001$

associations between socio-demographic characteristics and perceived learning needs. In this study, gender and highest educational attainment were significantly associated with perceived learning needs. Male respondents in this study significantly perceived that they have higher cardiac learning needs compared to females, following cardiovascular intervention, (p=.004). With regards to the highest educational attainment, respondents with secondary educational attainment significantly perceived that they have high cardiac learning needs (p<.001).

DISCUSSION

Many patients are diagnosed with CAD every year and many are unaware that it requires lifestyle changes especially in nutrition and physical activity. Patients with CAD have very comprehensive learning needs. Since the learning needs are focused on preventing any complications of cardiac disease, this study was therefore carried out to assess the learning needs among CAD patients who had their follow-up treatment in a cardiology clinic. The results revealed that almost two-thirds of the respondents specified high learning needs following their cardiovascular management (21, 22). The overall findings are consistent with previous studies and similar findings have been highlighted in the previous studies (12, 22, 23). In a study conducted by Smith & Liles (2007), it was found that majority of the respondents who received treatment for myocardial infarction rated their learning needs as highly important (24). Bailey (2004) also noted in a similar way that patients with CAD rated the position of information in CPLNI as moderate to very important (21). This indicates that learning needs are very important for patient education and patient management, especially among CAD patients.

Even though optimum timing for patient's counselling will reduce the hospital stay, it will cause rapid throughput and emotional shock among patients which also influenced their ability to absorb information (17). Followed by risk factors, medication information was identified as the most important learning need for CAD patients in this study. Our finding substantiates previous studies which discovered that patients with myocardial infarctions perceived information on medication and risk factors as the top domains for patient education (22, 25). A Jordanian hospital's study among patients admitted to the Coronary Care Unit (CCU) showed that medication information was ranked as one of the most crucial learning needs (21). Furthermore, CAD patients also recognized information on medication and risk factors as the most important aspects for learning (8, 26). This could be due to the fact that CAD survivors perceived that they have been given a second chance at life (27); hence, they follow medication advice strictly and opt for healthier lifestyles as part of the recovery process. CAD patients need to have access to medication information in order to know the benefits, side effects and other relevant information related to the prescribed medicine. Their medication information will increase patient compliance with medication regimens and improve the patient's prognosis.

Perceived cardiac learning needs and patient-related factors such as age, gender and highest educational attainment of the CAD patients correlate with one another. Ample evidence supports the significant association between age and perceived learning needs (21, 23). Around two-thirds (70.5%) of the male CAD patients perceived that they have high learning needs. Mutchler (2007) findings contradicted this finding in which they found that a majority of females perceived that they have high learning needs (25). The percentage of women who attended the cardiac rehabilitation program was lower in comparison to men (28). As a consequence, women obtain less information about patient management and thus perceive learning needs as a low priority. Perceived learning needs is significantly associated with highest educational attainment; however, in-depth details about the association have not been fully discovered and further studies should be conducted to elucidate this association.

In this finding, all authors have been informed about patients' learning needs and which domains of learning needs that should be prioritized for delivering effective information strategies. This study may become the point of reference to improve existing patients education and practice. The necessary CAD patients' learning needs identification will assist healthcare providers to prioritize and structure the patients education. Changes in practice usually depend on learning needs assessment in the planning for educational process. More effective educational intervention methods can be created which match to patients learning needs such as application through mobile technology. All healthcare providers able to connect with patients with current technologies, as they will also know the patient's condition. This can be achieved by prioritizing efforts to recognize patients' needs, spend more effort to fulfill patients' information needs and to establish a more attractive learning environment for CAD patients and their caregivers. Mobile technology application provides the opportunity to progress the access to health promotion interventions and has the exceptional benefit of being able to affect health behaviors in real-time. It will improve the patients' understanding of their salvage process and patients will feel more confident to reduce the chances of disease recurrence. It is critical to offer the population with detailed information followed by approaches to lessen the risk of developing diseases (7, 9). By enhancing the quality of patient learning, patients will be able to implement more effective coping strategies and improve their prognosis.

There are some limitations of the study that should be considered. First, majority of the participants in this study were male. Although heart disease is mostly common among men, it has been reported that CVD is the second leading cause of mortality among women aged 45 to 64 years (30). In addition, it has been discovered that hypertension is one of the risk factors for future cardiovascular events (31). Further research should be conducted to investigate information needs by different gender. Psychological symptoms such as influencing factors are the other features of future studies should consider to be explored. In addition, the data collected from single institution have restrictions the generalizability of the result. Therefore, our recommendations for future research studies are for the patients to complete the CPLNI pre- and post-discharge from the hospital with wider scope, larger sample and setting and including more exploratory methods. This would enable researchers to obtain important evidence about perceived learning needs from the patients.

CONCLUSION

Medication, risk factors and diet information have been identified as important specific content areas to learn by CAD patients. Healthcare providers, especially nurses should put extra efforts towards guiding their patients to handle challenges that may rise in their lives as they are the key player in preparing patients for recovery.

After being discharged from hospital, patients must have considerable knowledge and skills for effective self-management of coronary artery disease as it remains as one of the most serious heart complications. The content for cardiac educational programs for future intervention strategies can be developed using findings from this study. The determination of learning needs is central for successful patient education, to promote positive behavior changes and to control their risk

factor. Individualized patient teaching makes patients feel more self-assured to lessen the chance of recurrence of the disease.

Relevance to clinical practice: This important finding will allow healthcare providers to carefully fit patient education topics to meet each patient's unique learning needs, which could improve the patient's prognosis. Health education centered on disseminating knowledge and skills could bridge the knowledge gap among CAD patients.

Contribution to the global clinical community: This study reveals that coronary artery disease (CAD) patients reporting unmet needs for a few areas in disease management. The findings from this manuscript also provides guidance for health professionals in developing CAD management and education program. Future studies that utilize qualitative study should be conducted to explore this issue in greater depth.

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