Knowledge and Misconceptions on Cardiovascular Disease among Nursing Students

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Abstract—According to Centers for Disease Control and Prevention, Coronary artery disease is the most common type of heart disease in the United States. Nurse educators should evaluate the cardiac knowledge and misconceptions of the nursing students to ensure they are disseminating accurate information in their future practice. There were 362 Hong Kong nursing students participated in the study. The results showed that the scores for the nursing students’ level of knowledge were diverse. A negative correlation, $r=-0.33$ was found among students with more knowledge and fewer misconceptions. ($p<0.001$). The Chi-square tests found some associations between the students’ experiences of caring for cardiac patients and misconceptions about stress and physiology. A new paradigm of teaching should include inputs from both perspectives to help students to make critical use of theoretical knowledge to rectify their misconceptions and pursue excellence in the working world.

Keywords—cardiovascular disease; knowledge; misconception; nursing students

I. INTRODUCTION

This Heart diseases is an umbrella term used to describe people with a diagnosis of Coronary Artery Disease, Myocardial Infarction, Angina, Atrial Fibrillation, Heart Rhythm Disorders, Cardiomyopathy and Heart Failure etc [1]. According to Centers for Disease Control and Prevention, Coronary artery disease is the most common type of heart disease in the United States. The disease could lead to heart attack and people could reduce the risk for heart diseases through life style modifications [2]. Nowadays, different nations are developing strategies to reduce the risk of heart diseases through formal and informal education in community. Nurses are expected to have sound knowledge on cardiovascular care to dispel the misconceptions and to provide evidence-based interventions for preventing and caring patients suffering cardiovascular diseases.

Cardiac knowledge is not solely about anatomy and physiology, but also encompasses patients’ self-management skills, medications, risk factors, exercise, stress, and diet [3]. Cardiac misconceptions refer to false or mistaken views, opinions, or attitudes about heart problems that can influence patients’ interpretations of the recovery journey and their coping strategies. The negative impacts from misconceptions include higher levels of emotional distress, slower recovery, and poor physical functioning, all of which affect the wellbeing of the patients [4].

While there has been work published on cardiac knowledge and cardiac misconceptions on different healthcare and population groups, yet the literatures evaluating nursing students’ knowledge and misconceptions are sparse. The development of professional knowledge is considered an essential component of nursing education [5].

The objectives of this study are to: (1) examine the knowledge level of cardiovascular diseases of nursing students, (2) examine the misconceptions of cardiovascular diseases of nursing students, (3) assess the relationship between knowledge level and misconceptions of cardiovascular disease of nursing students, and (4) assess whether the misconceptions of cardiovascular disease are associated with the demographic characteristics.

II. METHODS

A. Research design

A cross-sectional sample survey was used to study the cardiac knowledge and cardiac misconceptions of nursing students in Hong Kong.

B. Sample size and sampling

Convenience sampling was used in this study. The study sample included 362 students from three publicly funded universities. The inclusion criteria for students’ participation were: (1) senior year students who had completed the theoretical components on cardiovascular nursing and (2) have attended clinical practicum in cardiovascular unit.

C. Research instruments

The questionnaire for demographics including personal particulars, clinical learning experiences in cardiovascular nursing was developed by the authors. The knowledge level of cardiac disease was assessed using the modified Coronary Heart Disease Knowledge Test [6]. The measurement scale is a 20-item multiple choice questions that examines knowledge and the associated risk factors of Coronary Heart Disease. The associated risk factors including physiology, body weight, stress and exercise. The total score
ranged from 0-20 with a higher score indicating higher level knowledge of disease and its risk factors.

For assessment of cardiac misconception, the York Cardiac Beliefs Questionnaire (YCBQv1) was used. The tool consisted of 24 items with responses indicating disagree or agree. The higher score meaning higher number of misconceptions [7].

Due to cultural differences, the researcher conducted the content validity test and reliability test of the Coronary Heart Disease Knowledge Test and the YCBQv1.

D. Data collection

Data collection was conducted over a three-month period. Convenient sampling was used for data collection. The questionnaires were distributed to all senior year nursing students in one of the university and through the social network of the researchers in another two universities. There were 385 questionnaires sent out with 362 questionnaires returned giving a response rate of 94.02%. There were 20 questionnaires being discarded due to large number of missing data and invalid responses. A total of 342 valid questionnaires were used for data analysis.

E. Data analysis

Statistical analysis were performed using IBM SPSS Statistics for Windows, Version 23.0 (IBM Corp, Armonk, NY). The data for demographics, scores for cardiac knowledge and misconceptions were examined using descriptive analysis. The correlation between cardiac knowledge and misconceptions was calculated using Pearson’s correlation. In addition, the association between the demographics and individual items on misconception were examined using chi-square test. The level of significance was set at p<0.05, two tailed test.

III. RESULTS

A. Characteristics of the students

For the demographics of students, majority of the students were female, single and did not have any cardiovascular diseases. A large majority (86.3%) of the students have been the primary caregiver of family members or relatives, while more than half of them have been the primary caregiver for clients with cardiovascular diseases during their clinical practicum.

B. Cardiac knowledge and cardiac misconceptions

- For misconceptions, the mean score for YCBQv1 was 6.98/18 (SD 2.84). The maximum score was 14, minimum score was 0, and the mode was 7 (13.2%). Higher scores indicated higher levels of misconceptions.
- Pearson’s correlations between knowledge score, subscales and misconception were significant (Table 1).
- There were six items with more than half of the nursing students answered wrongly illustrating the common misconceptions among this population. They were “Heart problems will definitely shorten your life whatever age you are”, “One of the main causes of heart diseases is stress”, “It is dangerous for people who have heart problems to argue”, “People who have a heart problem should always avoid having stress”, “Rest is the best medicine for heart problems” and “Angina is a kind of small heartattack”.
- Chi-square test was used to examine for additional insights into the associations between demographics and misconceptions of cardiac diseases. There was a significant association between students who had a history of cardiovascular disease and the belief that it is dangerous for people with heart problems to argue; between students who had been the primary caregiver of family members and the belief that having heart problems is a sign that you have a worn-out heart; between students who had been the primary caregiver of clients and the belief that having heart problems is a sign that you have a worn-out heart; and students who had been the primary caregiver of clients during their practicum and the belief that the main cause of heart diseases is stress. (Refer to Table 2). No significant association was noted between other demographics and misconceptions of cardiac diseases.

IV. DISCUSSION

The study provided new insights on cardiac knowledge and misconceptions among nursing students in Hong Kong. Majority of the students have demonstrated a reasonable level of cardiac knowledge, about 20% of the participants achieved a score of 13/18.

Since the nursing curriculum focused mostly on anatomy & physiology, risk factors and pathophysiology of cardiovascular diseases, students were found having inadequate knowledge about the effects of physical exercise in cardiac rehabilitation. The results of the study showed that the students had good knowledge about the risk factors of cardiac diseases and the diet that those with cardiac diseases should follow. The results for stress and exercise were somewhat satisfactory. A previous study showed that some patients who had had cardiovascular disorders did not perceive exercise to be a mechanism for long-term sustained changes in behaviour. The health benefits of exercise should therefore be promoted to influence the intention to adhere to physical exercise [8]. Exercise and non-sedentary lifestyle should be emphasized when teaching cardiovascular disease care as there are evidence showing that exercise training improve cardiac function and quality of life of patients. The
ideal forms of exercise following myocardial infarction should include different kinds of exercise, namely aerobic exercises, arm exercises, and strength training [9].

There was a large variation for the misconception score. Despite the total score was quite encouraging, the range of score was from 0-14 in the 18-item scale. The result indicating that some students were having high level of misconceptions which could affect their decisions in clinical practices. Other than the theoretical knowledge, it must be noted nursing students should be aware of the misconceptions to avoid passing on to patients.

A very common misconception held by the students was to avoid stress and argument for patients having cardiovascular diseases. The above belief could be related to Chinese culture that the major cause of the disease is related to stress.

Our data demonstrated students who have been care givers of family members or patients, there was misconception that having had cardiovascular disease was equivalent to having a worn out heart. The above belief could bring very negative emotional responses to patients suffering from the disease. Comparing this study with Lin’s study on nursing students [10], with exception of the item “People who have a heart problem should always avoid stress”, the respondents in the two studies demonstrated similar misbeliefs. A systematic review showed that exercise-based cardiac rehabilitation programme proved to be effective in restoring general health status and improving cardiovascular mortality and hospital admissions [11].

This study presents useful guidelines for developing the contents of cardiac nursing and is a starting point for promoting research on misconceptions held by undergraduate nursing students. It is consider paramount importance to target at common misconceptions in student learning, solely to increase theoretical knowledge may prove to be ineffective at dispelling incorrect beliefs held by the future nurses. The direction of teaching and learning should include inputs from different perspectives to help nursing students to gain knowledge as well as to rectify their misconceptions in the real patient world.

ACKNOWLEDGMENT

The authors would like to thank the nursing students who participated in the study.

REFERENCES


Table 1 Bivariate Correlations between the total score of Cardiac Knowledge Test (item 1 and Y5) (1)

<table>
<thead>
<tr>
<th></th>
<th>Risk factor</th>
<th>Diet</th>
<th>Stress</th>
<th>Exercise</th>
<th>Misconceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson's Cor. coeff.</td>
<td>0.41*</td>
<td>0.48*</td>
<td>0.37*</td>
<td>0.25*</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

*Correlation is significant at α = 0.01

Table 2 Associations between the demographics and misconception about heart diseases

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Misconception</th>
<th>N</th>
<th>Sig. (df=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student having had any cardiovascular disease</td>
<td>It is dangerous for people to have heart problems to argue</td>
<td>4.39</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Has the primary care of the family members or relatives</td>
<td>Having heart problems is a sign that you have a worn out heart</td>
<td>4.85</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Has a primary care gives for clients during procedures</td>
<td>Having heart problems is a sign that you hace a worn out heart</td>
<td>4.63</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Has a primary care gives for clients during procedures</td>
<td>One of the main causes of heart diseases is stress</td>
<td>7.80</td>
<td>&lt;0.005</td>
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