Cardiac misconceptions: comparisons among nurses, nursing students and people with heart disease in Taiwan

Lin, Y-P. , Furze, G. , Spilsbury, K. and Lewin, R.J.P.

CURVE is the Institutional Repository for Coventry University
http://curve.coventry.ac.uk/open

Title: Cardiac misconceptions: comparisons among nurses, nursing students and people with heart disease in Taiwan.

Abstract

Aim

This paper reports comparison studies of misconceived and potentially maladaptive beliefs about heart disease (cardiac misconceptions) held by nurses, nursing students and people with heart disease in Taiwan.

Background

Misconceived and maladaptive beliefs about heart disease have been shown to influence outcomes in people with heart disease, and eliciting and dispelling incorrect beliefs decreases disability. However, nurses do not routinely elicit these maladaptive beliefs, and may reinforce them.

Method

Between October 2005 and March 2006 a survey was conducted using the pilot [Name] Cardiac Beliefs questionnaire to measure cardiac misconceptions in 64 hospital-based nurses (13 of which were cardiac nurses); 134 nursing students; and 238 people with heart disease.

Results

Nursing students held fewer cardiac misconceptions than nurses (p=0.042). There were no significant differences in numbers of misconceptions between cardiac and general nurses, and there were no significant associations between level of qualification, years of nursing experience and number of misconceptions. Nurses with higher levels of education were more likely to hold fewer misconceptions (p=0.24). Patients held significantly more misconceived and maladaptive beliefs about heart problems than nurses (p< 0.001).

Conclusions

Taiwanese nurses require more continuing professional education to develop their clinical expertise, rather than relying on general nursing knowledge. Nurses who are involved in care for people with heart disease have a responsibility to assess and dispel peoples' misconceptions about heart disease. Further research should continue to focus on methods of dispelling cardiac misconceptions in both nursing and patient education.

Summary

What is already known about this topic

- Specific misconceptions about heart disease have been shown to influence patients' outcomes and dispelling negative beliefs can decrease disability

- Nursing staff have a major role in providing information about recovery for people with coronary heart disease

- Nurses do not routinely ask patients about their beliefs about heart disease and may inadvertently reinforce misconceptions

What this paper adds

- Nurses can hold active misconceptions about heart disease and may pass these on to patients

- Nursing students in Taiwan demonstrate better knowledge about heart disease than nursing staff; there were no significant differences in numbers of misconceptions between cardiac and general nurses

- More education about heart disease is required in initial nurse education in Taiwan, and continuing professional education for cardiac specialist nurses needs to be established

Introduction

Coronary heart disease (CHD) is a leading cause of morbidity and disability in adults in developed countries. Among people with existing CHD, secondary prevention is aimed at changing behavioural risk factors such as smoking, diet, and sedentary lifestyles. If people with heart disease hold misconceptions about their condition and how to cope with it that are different to the advice being given, then concordance with risk factor reduction and medication adherence may be poor (Horne, 1997; Byrne *et al.*, 2005). Patients' negative perceptions about heart disease are an important determinant in explaining the relationship between impairment and disability (Weinman & Petrie, 1997; Lewin, 1999). It is essential therefore that health professionals are well informed and equipped to elicit commonly held cardiac misconceptions and dispel them.

Background

Cardiac misconceptions are incorrect beliefs about heart problems, which can lead people to adopt maladaptive ways of coping. In the 1960s, Wynn (1967) noted that what people believed about their heart disease could have a profound effect on their lives after a heart attack. Patients' negative perceptions of their heart disease were related to adopting an unduly careful pattern of life; for example, the false belief that any work would be harmful to them provoked them to accept premature retirement (Wynn 1967). People with more misconceptions about living with heart disease were found to have a slower recovery and reduced rate of return to work (Maeland & Havik, 1987b; Petrie *et al.*, 1996), reduced autonomy post myocardial infarction (Havik & Maeland, 1987), more admissions to hospital (Maeland & Havik, 1989), overprotective behaviours (Petrie & Weinman, 1997) and poor attendance at cardiac rehabilitation (Broadbent *et al.*, 2006). Therefore, cardiac misconceptions appear to

4

have an effect on recovery from heart disease. Furze et al. (2002, 2003, 2005) demonstrated that there is a range of commonly held, specific misconceptions about angina that are implicated in reduced psychological and functional status. These misconceptions could be elicited by administration of a questionnaire (Furze, *et al.*, 2003).

Health professionals play an important role in providing information about recovery for people with CHD, but misconceptions may sometimes be instilled or reinforced by health professionals (Maeland & Havik, 1987a; Leventhal *et al.*, 1997). Beliefs and misconceptions about living with heart disease held by health professionals may influence the beliefs and behaviours of people with CHD. Bassan (1986) demonstrated that a majority of cardiologists held misconceptions about the effect of exertion in stable angina, with 58% believing that there was a risk (against the evidence) of permanent damage to the myocardium.

There are limited numbers of studies (conducted in Western countries) which have elicited health professionals' cardiac knowledge or misconceptions by comparing them with the knowledge of people suffering with heart problems. Maeland and Havik (1987a) reported that there were differences in cardiac beliefs held by nurses, doctors and physiotherapists, with cardiac nurses holding fewer cardiac misconceptions than doctors.

Newens et al. (1996) investigated differences in knowledge of cardiac-related symptoms and cardiac misconceptions between patients and nurses. Patients held more cardiac misconceptions than any health professional group. It was apparent that there was a significant knowledge gap between nurses and patients, the nurses were not accurate at assessing patients' beliefs, nor did they use opportunities to correct the misconceptions of patients. In a further study, Newens et al. (1997) found

that cardiac nurses held fewer misconceptions than general medical nurses, and that nurses who had received training to facilitate the Heart Manual - a cognitive-behavioural rehabilitation programme for post-myocardial infarction patients (Lewin *et al.*, 1992) - held fewer cardiac misconceptions than any other group. This viewpoint echoes the observation of Petrie and Weinman (1997), that health professionals do not routinely ask patients about their beliefs.

However, there is no evidence on cardiac misconceptions among Taiwanese nurses. It is therefore not known whether nurses in Taiwan hold the same, more or fewer cardiac misconceptions than their patients.

The Study

Aims

The aims of this study were to compare: (i) the cardiac misconceptions of Taiwanese nurses and student nurses; (ii) nurses' and patients' misconceptions and maladaptive beliefs about heart disease. The research questions were:

- To what extent do Taiwanese nurses and nursing students hold misconceived and maladaptive beliefs about heart disease?

- What are the cardiac misconceptions among cardiac and general nurses in Taiwan? Are there differences between the groups?

- Do nurses and student nurses hold similar misconceptions and maladaptive beliefs about heart disease as people with heart disease?

Design

A cross-sectional survey using a descriptive comparative design was carried out in Taiwan. The lack of evidence of nurses' cardiac misconceptions in Taiwan, meant that a descriptive design was most the appropriate to address the study questions.

Participants

The Nurses. In Taiwan, there are two routes for training as a nurse. 'Registered

nurse' is used to define nurses who have graduated from an accredited nursing programme at a technological academy, college or university and therefore hold a professional license. The term 'practical nurse' refers to nurses who have received high school or vocational school nurse training. The roles and responsibilities of both of these nurses are concerned with the delivery of direct clinical patient care (Tzeng & Ketefian, 2003). The difference relates to the grade and salary awarded following the different levels of preparation. Throughout this paper the term 'nurse' is used and refers to both registered and practical nurses.

A total of 64 nurses were recruited for this study. All nurses (registered and practical) working on the cardiac or medical wards in three participating hospitals in Northern and Central Taiwan were eligible for inclusion in the study. Those with less than six months experience of working as a clinical nurse were excluded. Fifty-one nurses were recruited from the medical wards (6 nurses from a medical centre; 25 from a regional hospital; and 20 from a local teaching hospital). Thirteen cardiac nurses were recruited from one cardiovascular ward at one hospital (patients were also recruited from this hospital).

The nursing students. In the Taiwanese educational system there are different entry points into nursing college. Students with a vocational or high school qualification then enter a 4-year college system to study nursing; whereas those who have studied at the technological academy where they undertake 2 or 3 years training after vocational school, then study for a further 2-years at college. A post registration bachelor of nursing conversion course is designed for registered nurses working in various clinical settings. Therefore, students were recruited from 4-year and 2-year nursing degree courses regardless of gender or ethnicity at the Nursing Department. The students who were currently undertaking a post registration bachelor of nursing

conversion course in a 2-year degree were excluded.

A total of 147 nursing students were drawn from a convenience sample of baccalaureate nursing students enrolled from three classes in one nursing college in Taipei. One hundred and thirty four questionnaires were completed and returned by these nursing students, giving a response rate of 91%. No data were collected from non-responders because the survey was voluntary and anonymous. Therefore, in total, 198 nurses were included in this study (including registered, practical and student nurses).

Patients. A total of 238 patients were recruited from a cardiovascular ward and five outpatient clinics in a hospital in Taipei City. In-patients with a diagnosis of CHD were identified by case note review undertaken by the first author (YPL). The selection criteria for patients were adults of all ages with a diagnosis of CHD regardless of gender or ethnicity. Patients who have had a myocardial infarction (MI), angina pectoris, mild to moderate congestive heart failure (New York Heart Association, NYHA Classes 1-3), coronary artery disease (CAD) defined by angiography, a cardiac revascularisation procedure (coronary artery bypass grafting, (CABG) or percutaneous transluminal coronary angioplasty (PTCA), were included. Patients who had undergone heart transplantation, heart valve surgery or who had severe heart failure (NYHA Class 4) were excluded. Patients who were in the acute stages of cardiac diseases and/or had unstable conditions were also excluded.

Data collection

Data collection took place for six months from October 2005 to March 2006. Questionnaires were sent to selected wards (where they were completed by the nurses and returned to a sealed box in the ward) or distributed to three selected classes of nursing students (where they were completed by students in the classroom

and returned to the researcher, YPL).

Survey instrument: questionnaire

The numbers of common misconceptions and maladaptive beliefs about heart disease held by the participants were assessed with a pilot version of the [Name] Cardiac Beliefs Questionnaire (pYCBQ). The pYCBQ is designed to elicit beliefs about causation and coping in heart disease that are misconceived or potentially maladaptive. It consists of 24 statements about heart problems with answers scored at 0 (Disagree) and 1 (Agree). A high score on this questionnaire means that people held more misconceptions. This questionnaire has been derived from interviews with English people with heart disease.

Validity and reliability

The pYCBQ has been shown to have good internal reliability (Cronbach's alpha score of 0.81) and stability (r= 0.85) in a study of British people awaiting coronary artery bypass graft surgery (Furze & Lewin, 2006). For the purpose of the study, the pYCBQ was translated into Chinese and independently back translated into English to check for accuracy. The Chinese version of the questionnaire was piloted with 11 Taiwanese at an English University who did not participate in the main study. No major changes were made to the questionnaire following the pilot study.

Ethical consideration

The study was approved by the Departmental Research Governance Committee at an English University and the study protocol was reviewed and approved by the study sites. Permission to conduct the study was also obtained from the directors of nursing in the participating Taiwanese hospitals, and from the institutional review board of the nursing department of the Taiwanese college. An information sheet and

a consent form were given to people who met the inclusion criteria for the study. The information sheet provided an explanation of the purpose of study, what would be requested of the participants and how data generated from the study would be used. All participants were guaranteed confidentially and anonymity, and were allowed to refuse or withdraw from the study at any time. Written consent was gained from all participants. Each participant was given a copy of the information sheet and consent form.

Statistical analyses

Analysis was performed with SPSS version 13.0 for Windows [Statistical Package for the Social Sciences (SPSS Inc, Chicago, IL. USA) 2004]. Demographic data, such as type of ward, level of qualification, length of time on current ward, age, and education, were analysed by descriptive analysis. Mean differences in pYCBQ scores between groups were analysed by student t-test and mean scores on pYCBQ across length time on current ward, education, years of nursing experience using analysis of variance or student t-test. Chi-square test of independence was used to compare responses to individual items of the pYCBQ. A p value of less than 0.05 was considered significant. Bonferroni adjustment was used when undertaking multiple comparisons of the data (the acceptance of a more stringent level of significance can help to guard against Type I errors).

Additionally, standard multiple regression analysis was conducted to assess the value of nurses' baseline demographic variables (type of ward, age, the length time on current ward, level of qualification, education, cardiac specialist qualification, total years working in nursing) as the independent variables in predicting the scores on the pYCBQ. Prior to performing regression analyses, initial assumptions checking were undertaken of the independent variables for multicollinearity and

singularity, outliers, normality, linearity, homoscedasticity and independence of residuals (Field, 2000; Pallant, 2005), applying SPSS Explore and SPSS Regression.

Results

Characteristics of nurse participants

All nurses in this study were female; the characteristics of nurses and nursing students are shown in Tables 1 and 2. Hospital nurses' age ranged from 20-50 years, with a mean age of 30 years (SD = 6.88). The majority of the nurses were registered nurses (95.3%) and had been nursing for a mean 7.8 years. 69.4% of the nursing students were practical nurses and 92.5% of those had not previously worked in the nursing field.

Characteristics of patient participants

The characteristics of patients are shown in Table 3.

Cardiac misconceptions

Descriptive scores of the pYCBQ

Mean score, standard deviation and range for pYCBQ total score for each group are shown in Table 4. Nursing students held the lowest mean score of pYCBQ than any other group.

Nurses and nursing students

There was a significant difference between nurses and nursing students in the total score on the pYCBQ (nurses mean score, 12.1 [SD=2.9]; nursing students, 11.2 [SD=2.8]; t = 2.05, p= 0.042; 95% CI= 0.03 - 1.75). Nursing students held fewer misconceptions and maladaptive beliefs about heart disease than the nurses. Analysis of nurses' and nursing students' responses to the individual items showed

four items with differences in responses (an alpha value of less than 0.05), however, with a bonferroni correction (p=0.002) these items were not significantly different.

Cardiac nurses and general nurses

The overall scale score across all 24 items of the pYCBQ for cardiac nurses ranged from 5 to 15; the range for general nurses was from 5 to 20. A surprising finding was that there were no significant differences on scores on the pYCBQ between nurses working on the cardiac ward and those working on other general wards (cardiac nurses: mean = 12.4, SD=2.9; general wards nurses: mean = 12.1, SD=2.9; t = 0.36, p= 0.724).

Scores were not related to the level of qualification (t = 0.13, p= 0.901), cardiac specialist nurse qualification (t = - 2.56, p = 0.799) or the length of years since qualifying (F = 0.76, p = 0.555), while there was a small difference in mean scores of the years on the current ward (F = 2.59, p =0.046). Post hoc tests revealed that nurses who had worked on their current ward for between 1 and 2 years had higher mean scores (13.8, SD = 3.12) than those who had worked there for 5 to10 years (10.9, SD = 2.94, p= 0.019), that is, nurses with less experience on their current wards held more misconceptions. There was also a slight difference on the mean scores on the pYCBQ related to education degree (t =2.26, P = 0.027); nurses who graduated from college or university held fewer misconceptions about heart disease (mean 11.1, SD = 3.13) than those with a technological academy degree (mean 12.8, SD = 2.63).

There were no significant correlations between type of ward, age, level of qualification, cardiac specialist qualification, and total years working in nursing and score on the pYCBQ. Therefore, it was not possible to undertake multiple regression using these variables. Only education (r= -0.28, p= 0.014) and the length time on

current ward (r= -0.25, p= 0.024) showed a relationship to the scores of pYCBQ. Therefore, standard multiple regression was performed to measure which is the best predictor of scores of pYCBQ. Following assumptions checking, there were no other violations. Results of the analysis are presented in Table 5. The model was significant ($F_{[2, 61]}= 4.84$, p= 0.011) and explained 13.7% of the variance (adjusted R^2). Of these two variables, education made the largest unique contribution in scores of pYCBQ (beta = -0.274), although the length time on current ward also made a near statistically significant contribution (beta = -0.247). The negative correlation between education and score of pYCBQ shows that nurses with higher education were more likely to hold fewer misconceptions.

Compared to Patients

The mean score on the pYCBQ for all nurses was 11.5 (SD=2.9) which was significantly lower than the patients' mean of 13.7 (SD=2.9; t = 7.71, p<0.001). The patients held significantly more misconceived and maladaptive beliefs about living with heart disease than the nurses. There were no significant differences between the nurses working in the cardiac ward and people with heart disease (cardiac nurses: mean = 12.4, SD=2.9; patients mean: 13.7, SD = 2.89; t = -1.56, p = 0.121). Table 6 shows the percent responses to individual pYCBQ items of nurses and patients. When patients' and nurses' responses to each item of the questionnaire were compared, there were significant differences on 7 items (2, 5, 8, 9, 10, 20 and 23; p< 0.001) between the two groups.

Discussion

Nurses and nursing students

It may be expected that the level of cardiac misconceptions depends on nurses' qualifications and working experiences, and that nurses may be better informed and hold fewer cardiac misconceptions than nursing students. However, data from this study revealed a slightly different picture, the findings showed that nursing students held slightly fewer misconceptions and maladaptive beliefs about heart disease than did nurses. Despite the majority of nursing students having little experience of nursing work, the students had received at least 3-5 years of formal nursing training courses and qualified as practice or registered nurses, and they were undertaking nursing college courses designed to convert their diploma certificate to a Bachelor of Nursing. In this study, all nursing students were undertaking college courses, while only 40% of qualified nurses had graduated from college or university. It suggests that a programme of continuing professional education may be required in order to enhance nurses' knowledge.

Age was not associated with pYCBQ score, and there was also no association found between work experience and the level of misconceptions among nurses in this study. However education was associated with scores on the pYCBQ; the higher educated the nurse was, the fewer misconceptions they held.

In Taiwan, nurses graduate from an official nursing education programme and hold a professional license as Registered Nurse or Practical Nurse. There is no difference in the responsibilities of Registered and Practice Nurses because their main responsibility is to provide direct clinical patient care (Tzeng & Ketefian, 2003) and also the certification is a permanent license without further assessment compared to western countries. In the USA and the UK, nurses need to undertake regular re-examination or to report that they have updated their professional knowledge in order to re-license. This may reflect that the health care system in Taiwan placed

more emphasis on basic clinical skills in nurses rather than in-service training; it is therefore suggested that continuing educational programmes are fundamental needs for clinical nurses.

Cardiac nurses and general nurses

A surprising finding of this study was that the cardiac nurses did not hold more cardiac knowledge than general nurses, and the level of qualification and years of nursing experiences were also not associated with number of misconceptions. The findings differ from previous studies that compared the responses between groups of nurses (Newens *et al.*, 1996; 1997). However, it must be noted that findings from research among nurses in different countries may not be generalisable to the Taiwanese health system. Newens et al. (1997) found that nurses working in specialist wards were significantly better informed about cardiac care and held fewer misconceptions than did nurses on general medical wards. The reasons were not explored; however, the possible explanations may be that nursing policy in Taiwan has not emphasized the need for specialist training in cardiac care and has focused on basic clinical skills (Tzeng & Ketefian, 2003), which is demonstrated by the fact that only 7.8% of nurses in this study held a specialist license. This lack of encouragement to undertake specialist training may have created a barrier to continuing education in nurses with a heavy workload in clinical care. Moreover, the study by Newens et al. (1997) demonstrated that nurses who had undertaken the Heart Manual training programme, held fewer misconceptions than those did not. This may provide evidence that nurses who are continuing to care for people with heart disease should undertake specialist training rather than relying on general medical knowledge. Another explanation is that the cardiac nurses in this study were recruited from only one unit and were a small sample, so the results could not be

generalized to other institutions or hospitals.

Nurses and cardiac patients

As might be expected, the patients held significantly more misconceived and maladaptive beliefs about heart problems than nurses and are consistent with the findings of Newens et al. (1996). It indicates that there were significant discrepancies in beliefs of heart problems between nurses and patients; this suggests that even when nurses are knowledgeable they may not convey the information to patients. It is most noteworthy that there may be nurses with a number of misconceptions that they may then pass on to the patients.

Both nurses and patients had a poor understanding of the disease process and physiology of CHD (items 1, 3, and 6). More than 70 percent of both groups believed that "the heart wall can easily rupture", "bound to another one [heart attack]" and "angina is a small heart attack". These strongly indicates that nurses did not have the correct knowledge of cardiac anatomy and physiology, and these misconceptions may be passed on to patients, with the result that they may cause patients to have an unnecessarily frightening image of living with heart disease. The consequence of holding such catastrophic misconceptions is that the patient may then adopt profoundly sedentary and avoidant lifestyles which would increase their risk of future cardiac events (Thompson *et al.*, 1976; Maeland & Havik, 1987a).

Moreover, the majority of nurses and patients believed that people should avoid anything that might bring on chest pain (item 18), take life easy (item 17) and rest is the best medicine (item 19). These findings are similar to those of Bassan (1986) who found that a majority of cardiologist believed that the symptom of angina must be avoided because there was a high risk of myocardial damage (which is contrary to the definition of stable angina – that any changes to the myocardium are reversed at the

end of the self-limiting episode) (Task Force of the European Society of Cardiology, 1997). However, these misconceptions can cause excessive anxiety among patients and may leads to patients restricting activities. These views of professionals may cause patients to adopt an inactive lifestyle at all costs and/or may lead to emotional distress about the consequences of undertaking activities, with the consequence of reduced physical fitness which means an increase in cardiac risk. All of the guidelines for secondary prevention in heart disease (for example: American College of Cardiology - American Heart Association, 2004; Scottish Intercollegiate Guidelines Network, 2007) emphasise the importance of maintaining and improving physical fitness through exercise, as lack of fitness is a risk factor for further events. In addition, nurses beliefs may also inform patients that they must never get excited or upset (item 2) and any kind of excitement could be bad (item 9). This may lead to a contraction of social life and a reduction in quality of life.

A common belief held by both nurses and patients was that stress is one main causes of developing heart disease. However the role of everyday life stress in atherogenesis is still under debate. The confusing results which feed this debate can be illustrated by two similar studies: (i) Macleod et al. (2002) found no link between perceived stress and objective indices of CHD in a prospective, 21-year follow-up of 5606 men in Scotland, and (ii) Rosengren et al. (1991), who found that people with higher perceived stress were more likely to suffer from cardiovascular disease in a prospective 11-year study of 6935 men in Sweden. What is known is that people who perceive stress to be the main cause of their heart disease (rather than the accepted behavioural risk factors) are less likely to engage with behavioural risk factor reduction (Petrie & Weinman, 1997; Weinman *et al.*, 2000). This suggests that, while believing that stress causes heart disease may not be a true misconception (as the

evidence is equivocal), it is a maladaptive belief because it encourages behavioural avoidance. Avoidance coping includes strategies such as denial and withdrawal (Roesch & Weiner, 2001). Although denial has been associated with a rapid recovery in the early phase of an illness, if patients continue to deny the severity of their condition then lifestyle change does not occur and mortality can increase (Havik & Maeland, 1988; Steptoe & Wardle, 1994). Nurses were less likely to believe that people with a heart problem should avoid stress, which, when taking their other belief that stress causes heart disease into account,   may suggest that whilst nurses may hold strong views on links between everyday life stress and heart disease, they may also believe that a life without stress could not be achieved.

Study limitations

A few limitations of this study should be noted when considering and interpreting the findings. The small number of nurses were recruited from one cardiac ward, three hospitals and one participating nursing college; therefore, the results could not be generalised to all nurse populations across Taiwan. Convenience samples were used in the study which may also result in an unrepresentative or biased study population. Further, a cross-sectional and descriptive comparative design was used, thus, the findings cannot be taken to imply a causal relationship of the knowledge gap between nurses and patients. Third, the questionnaire instrument was derived from belief statements held by English people with heart disease; it may not cover other aspects of misconceptions that were influenced by Taiwanese culture or social norm factors.

Conclusions

There have been no previous studies conducted in Taiwan with nurses related to misconceptions about heart disease. The findings of this study provide information

for nursing practice and education. The results suggest that damaging misconceptions are common in both patients and nurses and that as a result patients may become more distressed and disabled than is necessary (Furze *et al.*, 2005). It seems that training programmes need to be organised for nurses to educate them about these misconceptions, the effect these can have on patients and how best to dispel them. Nursing educators may incorporate the findings of this study into the cardiovascular nursing course for both nurses and nursing students, to assist them to a better understanding about heart disease and to also ensure that nurses' maladaptive beliefs will not reinforce those of the patients. Finally, further research should be conducted to ascertain any cultural differences between British and Taiwanese people beliefs about cardiac illness and misconceptions.

References

American College of Cardiology - American Heart Association. (2004). *ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction*. ACC/AHA: Washington DC.

Bassan, M. (1986). Who's afraid of angina pectoris? Separating the symptom from the marker. *The Lancet, 328*, 1442-1443.

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The brief illness perception questionnaire. *Journal of Psychosomatic Research, 60*(6), 631-637.

Byrne, M., Walsh, J., & Murphy, A. W. (2005). Secondary prevention of coronary heart disease: Patients beliefs and health-related behaviour. *Journal of Psychosomatic Research, 58*, 403-415.

Field, A. (2000). *Discovering statistics using SPSS for windows*. London: Sage.

Furze, G., Bull, P., Lewin, R. J. P., & Thompson D.R. (2003). Development of the York angina beliefs questionnaire. *Journal of Health Psychology, 8*(3), 307-315.

Furze, G., & Lewin, R. J. P. (2006). *Prehabilitation for surgery patients.* Paper presented at the *The 6th York Cardiac Care Conference*, University of York, May 2006.

Furze, G., Lewin, R. J. P., Murberg, T., Bull, P., & Thompson, D. R. (2005). Does it matter what patients think? The relationship between changes in patients' beliefs about angina and their psychological and functional status. *Journal of Psychosomatic Research, 59*, 323-329.

Furze, G., Roebuck, A., Bull, P., Lewin, R. J. P., & Thompson, D. R. (2002). A comparison of the illness beliefs of people with angina and their peers: A questionnaire study. *BMC Cardiovascular Disorders, 2:4, http://www.biomedcentral.com/1471-2261/2/4.*

Havik, O. E., & Maeland, J. G. (1987). Knowledge and expectations: Perceived illness in myocardial infarction patients. *Scandinavian Journal of Psychology, 28*, 281-292.

Havik, O. E., & Maeland, J. G. (1988). Verbal denial and outcomes in myocardial infarction patients. *Journal of Psychosomatic Research, 32*(2), 145-157.

Horne, R. (1997). Representations of medication and treatment: Advanced in theory and measurement. In K. Petrie & J. Weinman (Eds.), *Perceptions of illness and health* (pp. 155-187). Amsterdam; The Netherlands: Harwood Academic Publishers.

Leventhal, H., Benyamini, Y., Brownlee, S., Diefenbach, M., Leventhal, E. A., & Patrick-Miller, L., et al. (1997). Chapter 1: Illness representations: Theoretical foundations. In K. J. Petrie & J. A. Weinman (Eds.), *Perceptions of health and illness* (pp. 19-45). Amsterdam; The Netherlands: Harwood Academic Publishers.

Lewin, B., Robertson, I., Cay, E. L., Irving, J., & Campbell, M. A. (1992). Effects of self-help post myocardial infarction rehabilitation on psychological adjustment and use of health services. *Lancet, 339*, 1036-1040.

Lewin, R. J. P. (1999). Improving quality of life in patients with angina. *Heart, 82*, 654-655.

Macleod, J., Davey Smith, G., Heslop, P., Metcalfe, C., Carroll, D., Hart, C., et al.

(2002). Psychological stress and cardiovascular disease: Empirical

demonstration of bias in a prospective observational study of Scottish men.

British Medical Journal, 324, 1247-1253.

Maeland, J. G., & Havik, O. E. (1987a). Measuring cardiac health knowledge.

Scandinavian Journal of Caring Sciences, 7, 23-31.

Maeland, J. G., & Havik, O. E. (1987b). Psychological predictors for return to work

after a myocardial infarction. *Journal of Psychosomatic Research, 31*(4),

471-481.

Maeland, J. G., & Havik, O. E. (1989). Use of health services after a myocardial

infarction. *Scandinavian Journal of Social Medicine, 17*, 93-102.

Newens, A. J., Mccoll, E., Bond, S., & Priest, J. F. (1996). Patients' and nurses'

knowledge of cardiac-related symptoms and cardiac misconceptions. *Heart

Lung, 25*(3), 190-199.

Newens, A. J., McColl, E., Lewin, B., & Bond, S. (1997). Cardiac misconceptions

and knowledge in nurses caring for myocardial infarction patients. *Coronary

Health Care, 1*, 83-89.

Pallant, J. (2005). *SPSS survival manual. A step by step guide to data analysis using

SPSS for windows (version 12)* (Second ed.): Open University Press.

Petrie, K. J., Weinman, J., Sharp, N., & Buckley, J. (1996). Role of patients' view of

their illness in predicting return to work and functioning after myocardial

infarction: Longitudinal study. *British Medical Journal, 312*, 1191-1194.

Petrie, K. J., & Weinman, J. A. (1997). Chapter 15: Illness representations and

recovery from myocardial infarction. In K. J. Petrie & J. A. Weinman (Eds.),

Perceptions of health and illness (pp. 441-461). Amsterdam; The

Netherlands: Harwood Academic Publishers.

Roesch, S. C., & Weiner, B. (2001). A meta-analytic review of coping with illness. Do causal attributions matter? *Journal of Psychosomatic Research, 50*, 205-219.

Rosengren, A., Tibblin, G., & Wilhelmsen, L. (1991). Self perceived psychological stress and incidence of coronary artery: Disease in middle aged men. *The American Journal of Cardiology, 68*, 1171-1175.

Scottish Intercollegiate Guidelines Network. (2007). Risk estimation and the prevention of cardiovascular disease: A national clinical guideline - no. 97. *SIGN, Edinburgh*.

Steptoe, A., & Wardle, J. (1994). Coping with illness and disability. In A. Steptoe & J. Wardle (Eds.), *Psychosocial processes and health*. Cambridge University Press.

Task Force of the European Society of Cardiology. (1997). Management of stable angina pectoris. *European Heart Journal, 18*, 394-413.

Thompson, P. L., Wark, J., & Garland, S. (1976). The heart attack and doctor/patient communication. *The Medical Journal of Australia, 1*, 166-167.

Tzeng, H. M., & Ketefian, S. (2003). Demand for nursing competencies: An exploratory study in Taiwan's hospital system. *Journal of Clinical Nursing, 12*(4), 509-518.

Weinman, J., & Petrie, K. J. (1997). Illness perceptions: A new paradigm for psychosomatics? *Journal of Psychosomatic Research, 42*(2), 113-116.

Weinman, J., Petrie, K. J., Sharpe, N., & Walker, S. (2000). Causal attributions in patients and spouses following first-time myocardial infarction and

subsequent lifestyle changes. *British Journal of Health Psychology, 5*, 263-273.

Wynn, A. (1967). Unwarranted emotional distress in men with ischaemic heart disease. *The Medical Journal of Australia, 2*, 847-851.

Table 1 Characteristics of hospital nurses

	n=64	No	(%)
Gender	Females	64	(100)
Type of ward	Cardiac ward	13	(20.3)
	General medical	51	(79.7)
Length of time on	< 1	4	(6.3)
current ward (years)	1-2	16	(25.0)
	2-5	19	(29.7)
	5-10	23	(35.9)
	10-15	2	(93.1)
Level of qualification	Practical nurse	3	(4.7)
	Registered nurse	61	(95.3)
Education	Technological academy	38	(59.4)
	College/University	26	(40.6)
Cardiac specialist	Yes	5	(7.8)
qualification	No	59	(92.2)
Age (years)	Min: 20 Max: 50	Mean: 30	SD: 6.88
Total years working in nursing	Min: 0.5 Max: 30	Mean: 7.80	SD: 6.22

Table 2　Characteristics of nursing students

	n=134	No	(%)
Gender	Females	134	(100)
Degree system	4-year college	92	(68.7)
	2-year college	42	(31.3)
Working experience	None	124	(92.5)
in nursing (years)	1-2	8	(6.0)
	2-5	1	(0.7)
	> 5	1	(0.7)
Level of qualification	Practical nurse	93	(69.4)
	Registered nurse*	32	(23.9)
	None	9	(6.7)
Cardiac specialist	Yes	0	
qualification	No	134	(100)
Age (years)	Min: 18　　Max: 40	Mean: 20	SD: 2.16

* They are already registered nurses.

Table 3   Characteristics of patients

	n=238	No	(%)
Age	mean (SD)	71	(10.63)
Gender	Male	139	(58.4)
	Female	99	(41.6)
Marital status	Unmarried	8	(3.4)
	Married	192	(80.7)
	Divorced	8	(3.4)
	Widowed	30	(12.6)
Work status	Working	47	(19.7)
	Retired	156	(65.5)
	Unemployed	2	(0.8)
	Off sick	1	(0.4)
	Other(housewife)	32	(13.4)
Education	None/Never	22	(9.2)
	Primary	60	(25.2)
	Secondary	35	(14.7)
	High	62	(26.1)
	College/University	54	(22.7)
	Graduate	5	(2.1)
Comorbidity	None	45	(18.9)
	Diabetes	11	(4.6)
	Hypertension	126	(52.9)
	Diabetes & hypertension	46	(19.3)
	Others	10	(4.2)
Years since diagnosis	mean(SD)	5.6	(4.73)

Table 4   Total score on pYCBQ in each group

Group	n	Mean	SD	Range
Nurses	64	12.13	2.94	5-20
Cardiac nurses	13	12.38	2.91	5-15
General nurses	51	12.06	2.97	5-20
Nursing students	134	11.23	2.84	4-17
All nurses	198	11.50	2.90	4-20
Patients	238	13.66	2.89	4-19

Table 5   Standard regression analysis on score of pYCBQ

	Unstandardised coefficient	Standardised coefficient		
	B	Beta	t	Sig.
Education	-1.68	-.27	-2.31	.024
Length time on current ward (years)	-.22	-.25	-2.04	.042

Table 6   Comparison of the misconceptions held by patients and nurses

Item statement	Nurses n=198		Patients n=238		X^2	Sig. (df=1)
1. A heart attack makes a weak area in the heart wall that can easily rupture	131	(66.2)	176	(73.9)	3.15	.076
2. People who have heart problems should never get excited or upset	55	(27.8)	188	(79.0)	114.91	_<.001_
3. Once you have had one heart attack you are bound to have another one	166	(83.8)	169	(71.0)	10.00	.002
4. It's OK to disagree with people with heart problems	39	(19.7)	29	(12.2)	4.63	.031
5. People develop heart disease because of worry in their life	72	(36.4)	138	(58.0)	20.24	_<.001_
6. Angina is a kind of small heart attack	147	(74.2)	189	(79.4)	1.63	.201
7. People with heart problems should live life to the full	46	(23.2)	28	(11.8)	10.09	.001
8. There's not much you can do about heart problems	22	(11.1)	117	(49.2)	72.05	_<.001_
9. Any sort of excitement could be bad if you have heart problems	95	(48.0)	202	(84.9)	67.74	_<.001_
10 It's a good idea to check to see how you feel before doing something	148	(74.7)	211	(88.7)	14.38	_<.001_
11 Doing exercise can strengthen the heart muscle	16	(8.1)	22	(9.2)	0.18	.668
12 Heart problems are a sign that you have a worn out heart.	153	(77.3)	187	(78.6)	0.11	.745
13 You can reduce your risk of more heart problems	20	(10.1)	15	(6.3)	2.11	.146
14 Heart problems will definitely shorten your life whatever age you are	103	(52.0)	154	(64.7)	7.19	.007
15 One of main causes of heart disease is stress	161	(81.3)	196	(82.4)	0.08	.779
16 It is dangerous for people who have heart problems to argue	158	(79.8)	182	(76.5)	.70	.404
17 People with heart disease should take life easy	173	(87.4)	229	(96.2)	11.76	.001
18 It is important to avoid anything that might bring on angina or chest pain	178	(89.9)	221	(92.9)	1.22	.270
19 Heart problems are often caused by people's lifestyle	46	(23.2)	33	(13.9)	6.39	.011
20 People who have a heart problem should always avoid stress	98	(49.5)	210	(88.2)	78.22	_<.001_
21 Rest is the best medicine for heart problems	154	(77.8)	189	(79.4)	0.17	.678
22 It is important for people with heart problems to carry on doing enjoyable things	18	(9.1)	4	(1.7)	12.39	.001
23 Your heart is like a battery, the more you do, the faster it runs down	81	(40.9)	144	(67.1)	29.29	_<.001_
24 Changing your lifestyle can reduce your risk of more heart problem	1	(2.3)	4	(1.7)	1.32	.251