ADHERENCE TOWARDS MEDICATION AND QUALITY OF LIFE POST MYOCARDIAL INFARCTION PATIENTS

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ABSTRACT

Myocardial Infarction (MI) is life threatening cardiovascular disease worldwide, this disease cause by formation of necrotic areas within the myocardium. Medication adherence is very important to ensure that post myocardial infarction patients have good quality of life. The Objective of study is to determine the adherence towards medication relationship with quality of life post myocardial infarction patients. Cross sectional survey of one hundred and twelve of post MI patients was carried out. Participants were selected through convenient sampling during hospital visit. The data was collected through self-administered questionnaire adapted from Mac New health related Quality of Life, and Morisky Medication Adherence Scale (MMAS) to indicate level of quality of life and level of medication adherence. Most of the respondents had poor adherence towards medication 56 (50%). A statistically significant relationship was found between medication adherence and quality of life of post myocardial infarction ($\chi2= 32.705$ p < 0.001). The finding shows most of the respondents had poor medication adherence and affect their quality of life. Healthcare provider have to actively and consistently educate post MI patients to strictly adherent towards their medication to improve quality of life as well decrease medical cost.

Keywords: Myocardial Infarction, Cardiovascular, Quality of Life, Medication, Adherence.

1.0   INTRODUCTION

Myocardial Infarction (MI) is become number one killer disease worldwide, this disease cause by formation of necrotic areas within the myocardium. This necrotic area happened in the myocardium cell due persistent lack of oxygen supply to myocardium due to a plaque, erosion, and dissection (Basand et al, 2007; European Society of Cardiology, 2010).   In Malaysia there were 14, 385 new cases of Acute Myocardial Infarction (AMI) documented   in 2010 that cause 1950 patient's death (Country Health Information Profile, 2011).   Myocardial infarction in included as Cardiovascular diseases (CVD) which is   involve of angina pectoris, unstable angina or silent myocardial ischemia, myocardial   infarction as ST elevation MI or non   ST elevation MI (NSTEMI) always become life threatening for the patients.   According to WHO, 2009 myocardial infarction cause for 30% mortality rate worldwide, which was with an estimated around 17.5 million deaths each year. Cardiovascular disease   are estimated to account for   seven out of ten deaths especially in   non-developing country such as such as Thailand, Philippines and   Indonesia and around   20–30% death   in urban China,   Hong   Kong,   Japan,   Korea   and   Malaysia   (S.Kep,   Kritpracha,   & Thaniwattananon, 2013).

Medication adherence is defined as patients take the medicine as ordered by the doctor such as   three   times   a   day   and   continue   take   the   medication   consistently (U.S. Department of Health and Human Services, 2009). Medication adherence were strongly believed as accordingly related to the theory of health belief model, if the patient belief of the advantage of the medication the patients will be adherence to the medication.

There   are   few medication that always been used as the standard guideline for post Myocardial Infarction patients, such as beta-blocker, a lipid lowering agent, an angiotensin enzyme (ACE), inhibitor or angiotensin receptor blocker, and aspirin   if not contraindicated. The reduction of mortality by 80% was proven can reduce the risk of coronary artery disease (CAD) by adherence to all the medication in the standard

guideline (Chou dry & Winkelmayer, 2007). Unfortunately lots of studies have done shows, only 45% of patient's adherence towards their medication (Chou dry et al., 2007). There are a lot of complication due to non-adherence towards medication such as can cause adverse outcome and affect the quality of life among post myocardial infarction. Recently this medication non adherence become a serious issue and attract the attention to clinicians, and healthcare systems, because of mounting evidence proven this issue can contribute of increasing health care costs that can be a burden to the family, organization, and country.

The aim of this study is to determine the relationship between adherences towards medication among post myocardial infarction in relation to quality of life. Through this result one programmed should be prepared to encourage the patient to full; vital and productive lives in cardiac event those have been diagnosis to the patient, and educate patients to strictly adherence with their medication to improve patient's quality of life.

After myocardial infarction most of the patients the quality of life have been affected, it will compromise the areas of patients general health condition including social and emotional (Deckel et al., 2009; Chacko et al., 2012). The level of Quality of life (QOL) among post myocardial infarction patients has become seriously important outcome measure after hospital admission for acute myocardial infarction (AMI).

MI is become main cause of morbidity and mortality all over the world. More than three million people each year are estimated to have an acute ST elevation Myocardial Infarction (STEMI), and more than four million have a non ST elevation Myocardial Infarction (NSTEMI). In Malaysia, ischemic heart disease alone accounts for 12.9% of medically certified deaths in 2008. Prevalence of MI increases with age and is higher in men (14.4%) than in women (10.6%) (Kumolosasi et al., 2013). Post Myocardial infarction patients are very risky to have sudden cardiac death because of the complication of malignant ventricular arrhythmias within 1–2 years of MI.

According to Laba, Bleasel, Brien, Cass, Howard, & Peiris (2013), medication adherence is a very seriuos and complex health behaviour that strongly influenced cardiovascular patients on their belief to take their prescribed medication, they become a barrier to take medication if the patients did not belief on the advantage of their medication taken that can cure their disease. It have been reported that in high income country it is estimated around 50% of patients who are been prescribed with cardiavascular medication do not take their medication consistently and the percentage of poor medication adherence is become more higher than 50% for the low and middle income countries (Horne et. al., 2005).

Quality of life is a broad concept affected in a complex way by the person's physical health, psychological state, and level of independence, social relationships and their relationships to salient features of the environment. It represents the effects of illness and treatment as perceived by the patient and is important as a primary outcome measure.

Studies have shown that physical activity declines dramatically in the months after an MI (Chakco et al., 2012). There are a lot of studies shows the number of MI patients is increasing and the QoL is adversely affected due to this illness. The long-term course of MI has changed in recent decades; with a substantially increased survival leading to the need for additional outcome measures in patients with MI. Quality of Life has proved useful for measuring the outcome after MI when following up patients with CAD.

2.0   LITERATURE REVIEW
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There are a lot of studies done on medication adherence and quality of life among post myocardial infarction patients, all over the world because myocardial infarction has arising worldwide.

2.1   Myocardial infarction

Myocardial infarction (MI) is a major cause of death and disability worldwide. Coronary atherosclerosis is a chronic disease with stable and unstable periods.   The term myocardial infarction has major psychological and legal implications for the individual and society. It is an indicator of one of the leading health problems in the world, and it is an outcome measure in clinical trials and observational studies. With these perspectives, myocardial infarction may be defined from a number of different clinical, electrocardiographic, biochemical, imaging, and pathological characteristics. Myocardial infarction is defined by pathology as myocardial cell death due to prolonged ischemia.

MI is a major cause of morbidity and mortality worldwide. More than three million people each year are estimated to have an acute STEMI, and more than four million have a NSTEMI. In Malaysia, ischemic heart disease alone accounts for 12.9% of medically certified deaths in 2008. Prevalence of MI increases with age and is higher in men (14.4%) than in women (10.6%) (Kumolosasi et al., 2013).

MI is a traumatic and life-threatening event that has a sudden and dramatic impact on patients and cares. Patients with MI and their partners reported similar post-MI stresses such as fear and anxiety, and described "struggling", "suffering from loss of freedom", "feeling guilty and ashamed about being weak", "withholding feelings", "feeling useless", and "losing strength"   with all these feeling will definitely affected the patients quality of life   post myocardial infarction. Partners also experienced unexpected physical, psychological and economic difficulties which included the threat of loss of a partner, the trauma of separation, child and household care problems, financial strain, role change, self-esteem problems and an uncertain and unpredictable future.

2.2 Medication Adherence

Adherence has been defined as the "active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result (Arif et al., 2007). This definition stated that the patients have their own decision to accept the treatment goal given by the doctors or healthcare providers. Medication adherence usually refers to whether patients take their medications as prescribed (eg, twice daily), as well as whether they continue to take a prescribed medication.

Medication adherence is a growing concern to clinicians, healthcare systems, and other stakeholders (eg, payers) because of mounting evidence that nonadherence is prevalent and associated with adverse outcomes and higher costs of care which shows that the quality of life patients will also be affected.

Medication nonadherence is likely to grow as the US population ages and as patients take more medications to treat chronic conditions (Ho et al., 2009). A retrospective cohort study of 15,767 patients conducted by Ho et al. (2009) in a cardiac artery disease registry to examine adherence rates to beta blockers, ACE inhibitors, and statins. Patient characteristics associated with non-adherence and the clinical consequences of non-adherence to these medicines were documented. The medication adherence rate was determined numerically as the proportion of days covered which was calculated by dividing the total number of days supplied for each class of medication by the time interval observed. In this study shows that patient adherence to medication is very low. Nonadherence to medications is common for patients with cardiovascular diseases. After acute myocardial infarction hospitalization (Iackevicius et al., 2008) in their studies found that almost on fourth of patients (24%) did not even fill their cardiac medications by day 7 of discharge.

2.3 Quality of life post myocardial infarction.

In 1948 the WHO defined health as "…a state of complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity". The concept of quality of life lacks a formally agreed definition, but it is clearly complex, abstract and multidimensional. Quality of life is distinct from (but related to) health and many attempts to define quality of life have been based on the WHO definition of health. The quality of life assessment group of the WHO defines quality of life as "the individual's perception of their position in life in context of the culture and value system in which they live and in relation to their goals, expectations, standard, and concerns".

The long-term course of MI has changed in recent decades, with a substantially increased survival leading to the need for additional outcome measures in patients with MI. Health Related Quality of Life (HRQoL), has been proved useful for measuring the outcome after MI when following up patients with CAD. A better understanding of HRQoL in cardiac diseases is crucial, as is the need for adequate and well-functioning instruments to measure HRQoL in these diseases.

QoL is a broad concept affected in a complex way by the person's physical health, psychological state, and level of independence, social relationships and their relationships to salient features of the environment. It represents the effects of illness and treatment as perceived by the patient and is important as a primary outcome measure. Myocardial Infarction (MI) is a life threatening condition characterized by the formation of localized necrotic areas within the myocardium. MI usually follows the sudden occlusion of a coronary artery and the abrupt cessation of blood and oxygen flow to the heart muscle. Because the heart muscle must function continuously, blockage of blood to the muscle and the development of necrotic areas can be lethal. Coronary Heart Disease (CHD) is the major cause of death and disability in the world it affects all aspects of an individual's health - physical mental social and perception of wellbeing. The challenge facing health care professionals today is how to encourage

people to be physically active and to maintain health promoting behaviors. Studies have shown that physical activity declines dramatically in the months after an MI (Chakco et al., 2012). There a lot of studies show the number of MI patients is increasing and the QoL is adversely affected due to this illness.

3.0   MATERIALS AND METHODS

Cross sectional survey design was used in this study, patient who had diagnosed Myocardial infarction and visited cardiac clinic in Serdang Hospital were invited to participate in this study.

3.1   Instruments

Data was collected using a questionnaire, which was adapted from The MacNew Heart Disease Health-related Quality of Life to assess participant QoL and Morisky Medication adherence Scale (MMAS-8) to determine the medication adherence level. The questionnaire comprised of three parts, Part A contains 5 questions about the demographic data (age, race, gender, income level and education level). Part B questionnaires about medication adherence, there are 8 items on adherence, which are based on the assumption that the mistakes and neglect in taking medication are the result of forgetfulness, carelessness, or the tendency to stop taking medication when the patient begins to feel better, only resuming medication when they begin to feel worse.

The degree of adherence was determined according to the score resulting from the sum of all the correct answers: high adherence (eight points), average adherence (6 to < 8 points) and poor adherence (< 6 points). In this study, patients were considered adherent when they had a score equal to eight in the MMAS-8. Part C questionnaires about Quality of life post MI patients. Mac New heart disease health related quality of life, this Part C deals with quality of life related statements to assess the quality of life among myocardial infarction patients. It consists of 27 quality of life related statements

dealing with three domains such as physical, emotional and social which include seven options the score ranging from 1 to 7. The total score is 189. The QoL has been divided into three categories based on the scores in the questionnaires answered.

The three categories are: a) Good quality of life the total score ranging from 136-189; b) Moderate quality of life the total score ranging from 81-135; c) Poor quality of life the total score ranging from 27-80.

3.2   Setting and sample

A sample size of 132 post MI patients were determined as adequate to estimate the population parameter, based on a 10% prevalence of post MI patients with a 95% confidence interval for 2400 patients diagnosed MI visited cardiac clinic in Serdang Hospital. To allow for a 5% attrition rate, 140 patients were recruited for the study, however, only 112 of the sample who consented completed and returned the questionnaires, giving a response rate of 80% of the estimated sample.

3.3   Inclusion and exclusion criteria

Post myocardial infarction patient first time diagnose within 3 month to 36 month, age 35 to 65 years old, willing to participate for the study were included in the study, and able to read and write in Malay or English. Patient was not diagnose MI, critically ill post MI patient or patient who have stroke and post CABG, with severe heart failure, or severe comorbidities that may affect their quality of life such as renal failure, chronic anemia, depressed, dementia, etc., and age more than 65 years old were excluded.

3.4   Ethical considerations

Researcher had registered this study to the National Medical Research Register (NMRR) NMRR ID   14 -926-21977, which is under MOH National Institute of Health (NIH), as the study was conducted in a Government Hospital.

Potential participants were screened for eligibility using the inclusion and exclusion criteria. The eligible participants received information and consent form, which they were required to read and sign prior to participation in the study. Participants were informed of their rights not to participate and the freedom to withdraw at any time from the study; their participation or none participation would not in any way affect the treatment they were receiving from the hospital. All the data were kept confidential and anonymous.

3.5   Data analysis

The data were entered into spreadsheet and analyzed using SPSS v. 21.0. The results of the study were analyzed using descriptive and inferential statistics. Descriptive statistics was use to describe the demographic variables of age, frequencies and percentage done for income , education level , ethnicity and sex, level of medication adherence and level of quality of life MI patients. Chi-square was used to determine significant relationship between variables. The level of significance was set at level of p value <0.05.

4.0   RESULTS

The primary purpose of this study was to determine the relationship between medication adherence and quality of life post MI patients. One hundred and twelve post MI patients, who visited Serdang Hospital, participated in this study.

4.1   Demographic data

The ages of the respondents ranged from 36 and 65 years old (M = 52.98, *SD* = 7.79). All the respondents have basic education, 19% had primary education, 75% had secondary education and only 18% had tertiary education as college and university. Individual income per month was categorizes in 3 category <RM 1500, there were 54 (48.2%), second category RM1500 - RM5000 there were 46 (41.1%) and there were 12 (10.7%) in the third category income per month > RM5000.   All the respondents came

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from various ethnic group most of them are Malays 64 (57.1%), Indian 26 (23.2%), Chinese 20 (17.9%), and others ethnicity 2 (1.8%).

The level of medication adherence and the quality of life was determined by the descriptive analysis using frequency and percentage. The result was presented in the table.

4.2 Medication Adherence

Table 1: Frequency and percentage of respondent distribution on level of Medication Adherence

Medication adherence level	Frequency (f)	Percentage (%)
High adherence	13	11.6
Moderate adherece	43	38.4
Poor adherence	56	50.0
Total	112	100.0

Table 2: Frequency and percentage of respondent distribution on level of Quality of life

Quality of Life level	Frequency (f)	Percentage (%)
Good	55	49.1
Moderate	40	35.7
Poor	17	15.2
Total	112	100.0

From the result above shows that most of the respondents had poor adherence towards medication 56 (50%), moderate adherence 43 (38.4%) and high adherence only 13

(11.6%). On the other hand, the level of Quality of life among post myocardial infarction shows that very little had poor quality of live 17 (15.2%). Moderate Quality of Life 40 (35.7%) and most of the MI patient had good quality of life 55 (49.1%).

The main purpose of this study was to determine if there is any relationship between medication adherence and quality of life. Chi Square test, using p value < 0.05 alpha level of significant. The results were display in cross tabulation table.

Table 3: Association between Medication adherence and Quality of life among post Myocardial Infarction.

Medication Adherence	Quality of Life (QOL) (n %)			$\chi2$ -Value	P value
	Poor	Moderate	Good		
Poor	30.4%	33.9%	35.7%	32.705	< 0.001
Moderate	0%	48.8%	51.2%		
High			100%		

Notes : $\chi2$= Chi-square

The finding showed that there is a statistical significant relationship between medication adherence and Quality of Life, $\chi2$= Chi-square value 32.705 p < 0.001. There were respondent s with low medication adherence was has also poor quality of life (30.4%), and respondents who had high adherence of medication had 100% good quality of life.

As a conclusion medication adherence had influence the quality of life post myocardial infarction patients.

5.0   DISCUSSION

Medication non adherence among post MI patients will contribute to a lot of its complications; this problem cannot be ignored from the health and economic aspects. Every year our government had put extra spending in healthcare include the budget for medications, but a lot of study shows that Malaysian are poor adherence towards medication especially in the long term medication, and prolong illness, because of the asymptomatic nature of the disease, low adherence of patients to their prescribed cardiac medication is a widespread problem. The direct and indirect consequences of not taking the prescribed therapy are very important. Patients' adherence with medication therapy for myocardial infarction was reported to vary between 50% and 60% from study to study, based on the study methods employed and the population under study.

Most of the patients have problems with adherence towards their medication because it's difficult to remember the scheme of drug therapy, either because of personal reasons, forgetfulness and comorbidities, or because of the complicated scheme of treatment, or insufficiently explained meaning of the need for regular intake of prescribed medication. Cognitive and communication factors also affect medication adherence (Lalic et al., 2013).

The importance of improving medication adherence is to achieve the full benefits of treatment is evident. Adherence towards medications provides a better quality of life (Choudhry et al., 2007). It is very important to the healthcare provider to improve the level of medication adherence so that can improve the quality of life of post MI patients to have good quality of life.   Poor adherence is also associated with worse health outcomes (Hofer et al., 2006; Hawkers et al., 2006; Ramusen, Chong and Alter, 2007).

Increasing medication adherence especially in long term treatment (Stuber et. al., 2008) is often imposed the decrease healthcare cost and improve patients healthcare quality and increase patients quality of life (Osterberg & Blasche, 2005).

One of the goals of nursing care is health promotion and prevention of disease to achieve better quality of life. Post myocardial infarct patient have to move from complete dependence to independence in his activities of daily living (ADL) for the better quality of life (Abdellhameed et. al., 2013). Patients who adhere to medications experience better outcomes and good quality of life, than their non-adherence counterparts (Choudhry et. al., 2014).

The healthcare system must seriously take an intervention to overcome this problem because increase level of patients medication adherence is worthy goal in maximal benefit of the all expensive cost that organization, or government have to pay for the patients. Poor quality of life post myocardial infarction can cause a burden to the healthcare system and patient's family.

6.0   RECOMMENDATION FOR FUTURE RESEARCH

The issue of the problem of non-adherence towards medication among post myocardial infarction is very severe. Future research using prospective design and standardized or find the standard gold method to measure medication adherence, calculate the rates of adherences for specific post myocardial infarction medication, sufficient data of reason for discontinuation the medication and factors contributing of non-adherence towards medication, control for the confounding variables and duration follow up for the study must be more than one year, to be done. Hopefully more effective intervention can put into practice to improve medication adherence among post myocardial infarction patients and which can improve the quality of life and as such can increase the survival rate of post myocardial infarction patients.

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