



Journal of Health and Medical Sciences

Bahall, Mandreker. (2021), Early Post-Acute Myocardial Infarction: Psychosocial and Financial Concerns. In: *Journal of Health and Medical Sciences*, Vol.4, No.3, 37-46.

ISSN 2622-7258

DOI: 10.31014/aior.1994.04.03.176

The online version of this article can be found at:

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Published by:

The Asian Institute of Research

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Early Post-Acute Myocardial Infarction: Psychosocial and Financial Concerns

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Abstract

Purpose: Acute myocardial infarction (AMI) is a major cardiovascular event that has significant psycho-social-physical and lifestyle consequences. This study assessed the feelings of patients within days following an AMI in a public health institute in Trinidad and Tobago. **Results:** Of the 150 AMI patients, 134 (89.3%), were included in the study. Sixteen (10.7%) patients were not included due to inadequate information. Among the post-AMI patients, common negative feelings experienced include fear of another heart attack ($n = 74, 55.2\%$), fear of death ($n = 40, 29.9\%$), and fear of the future ($n = 29, 21.6\%$). However, the positive thoughts of the AMI patients predominated: intentions to improve eating habits ($n = 97, 73.5\%$), and increased spirituality ($n = 82, 62.1\%$). Changes in feelings from pre to post AMI were most pronounced for positive feelings such as improved eating habits, regular exercise, and improved goals. In general, among the post-AMI patients, there were no significant associations between age and sex. However, significant associations were found between selected lifestyles variables (exercise, alcohol, eating habits, employment status, hypertension, and obesity) and psychological issues such as fear of another heart attack, improved relationships, or turning to God. **Conclusions:** Post-AMI patients experienced major psychosocial issues in the early post-AMI period. Though negative feelings were common, most of the patients resolved to make positive lifestyle changes.

Keywords: Depression, Post-AMI, Post AMI Feelings, Psychosocial Factors

1. Introduction

Although life-threatening diseases such as heart attacks, aortic dissections, and pulmonary emboli have generally been accompanied by physical, social, and psychological/emotional trauma (British Heart Foundation [BHF], 2019; Rozanski, Blumenthal, Davidson, Saab, & Kubzansky, 2005), the accompanying psychological distress, such as anxiety and a sense of impending doom (Boersma & Maes, 2006), as well as social and financial problems have been less widely studied (Strawbridge, 2012). Following an acute myocardial infarction (AMI), many patients experience feelings of numbness (BHF, 2019), fear (BHF, 2019; Strawbridge, 2012), sadness/grief (BHF, 2019), helplessness (BHF, 2019; Boersma & Maes, 2006), guilt (BHF, 2019), shame (BHF, 2019; Boersma & Maes, 2006), anger (BHF, 2019), changes in relationship dynamics (BHF, 2019; Derbyshire Community Health Services

[DCHS], 2012; Singer, 2010), shock (Strawbridge, 2012), worry (BHF, 2019), and isolation (BHF, 2019; DCHS, 2012; Singer, 2010). The sequelae of decreased physical (Anokye, Trueman, Green, Pavey & Taylor, 2012) and social activities (H. Park, Chun, Choi, Lee, Kim, E.-C. Park, 2015) are the worsening lifestyles of patients (Sertoz et al., 2013), increased risk of cardiac-related incidents, deaths, and re-hospitalisations (Hiriscau and Bodolea, 2019; Smith and Blumenthal, 2011). The psychosocial and financial issues also contribute to a decrease in the patients' general well-being. While it is indeed necessary to deal with the life-threatening physical issues at the time of admission, the patients' non-physical issues should also be addressed, as these may also have an impact on their overall health and recovery. However, there have been no published studies on the early psychosocial consequences that occur post-AMI, in the Caribbean. Therefore, this study explored the patients' psychosocial and financial concerns soon after they experienced myocardial infarctions.

2. Method

This cross-sectional study comprised patients admitted to the San Fernando General Hospital (SFGH), Trinidad, between November 2015 and March 2016, with a diagnosis of AMI identified by change in troponin and with symptoms of AMI (Thygesen K, Alpert JS, Jaffe AS, Simoons ML, Chaitman BR, White HD, et al. 2012). The hospital is a 745-bed facility that offers free public healthcare to a catchment of 600,000 persons. There are 46 785 admissions to this hospital annually, of which 15 339 (32.8%) are medical admissions (2010) [12]. The overall hospital-based incidence rate (IR) of AMI in South Trinidad was 90.6 per 100,000 population: Indo-Trinidadian males (141 per 100,000), Indo-Trinidadian females (90 per 100,000), Afro-Trinidadian males (81 per 100,000), and Afro-Trinidadian females (45 per 100,000) (Bahall, 2016). Patients with a diagnosis of AMI identified from the ward registration book were reviewed for confirmation using the patients' medical records and by double-checking with the attending doctors. Exclusion criteria included patients who were confused (incoherent), declined participation, had poor health statuses, or were unavailable at the time of selection because of medical treatment. Due to the challenges in interviewing acute AMI admissions, a study using approximately 150 patients was conducted. Data were obtained using a questionnaire. The questionnaire comprised questions on demographics (9 questions), medical histories (23 questions), and psychosocial evaluations (47 questions). The list of specific areas in the psychosocial questions was obtained after reviewing the literature and ascertaining areas of possible interest. The questionnaire was pre-tested to ensure clarity of the questions and fulfilment of the objectives of the study. Patients identified as fulfilling the criteria (lucid and unambiguous) and available at the time of selection for the sample, were approached. Patients were included after discussing the nature of the study and providing verbal consent. Patients who consented to participate in the study were informed that they were free to discontinue the interview if they wished to do so, without any compromise whatsoever, in their treatment. The interview was conducted by a trained research assistant (a second-year medical student) between the third and fifth-day post-AMI.

2.1 Statistical Analysis

The collected data were entered into a secure computer that was accessible only to the researcher and his assistants. Data analysis was conducted using SPSS, Version 21 (IBM Corp., Armonk, NY). Both descriptive and inferential analyses were used. A change in patient responses (both negative and positive) in post-AMI patients was calculated by using the difference between the overall number of patients who experienced the [named] effect post-AMI and those who also experienced the effect pre-AMI. This difference represented those additional patients who experienced or developed the effect post-AMI. Differences in socio-demographics, lifestyle and medical factors (sex, age, ethnicity, employment status, stress/depression, level of support, history of smoking, exercise, alcohol usage, diabetes, hypertensive, STEMI/NSTEMI, obese, hypercholesteraemic and whether they have a family history of ischaemic heart disease [IHD]) were obtained. For simplicity, the patient support variable was recoded into categories, namely 'Spouse,' 'Other Family,' 'Friend,' 'Other,' or without support. Descriptive methods included frequency and percentage distribution tables and summary statistics (means and standard deviations). Inferential methods included 95% confidence intervals (CI) and hypothesis testing.

3. Results

3.1 Demographic Data

Table 1: Demographic data

Characteristics	n	%
Age (n = 127)		
≤ 45 years	12	9.4
>45 years	115	90.6
Sex (n = 131)		
Male	87	66.4
Female	44	33.6
Ethnicity (n = 122)		
Indian	100	82.0
African	19	15.6
Mixed	3	2.5
Employed (n = 121)		
Yes	54	44.6
No	67	55.4
AMI diagnosis (n = 101)		
STEMI	76	75.2
NSTEMI	25	24.8

Patients were predominantly male (66.4%), middle aged (90.6%), Indo-Trinidadian (82.0%) and suffered from hypertension (66.4%) and (STEMI (75.2%)) (Table 1 and Figure 1).

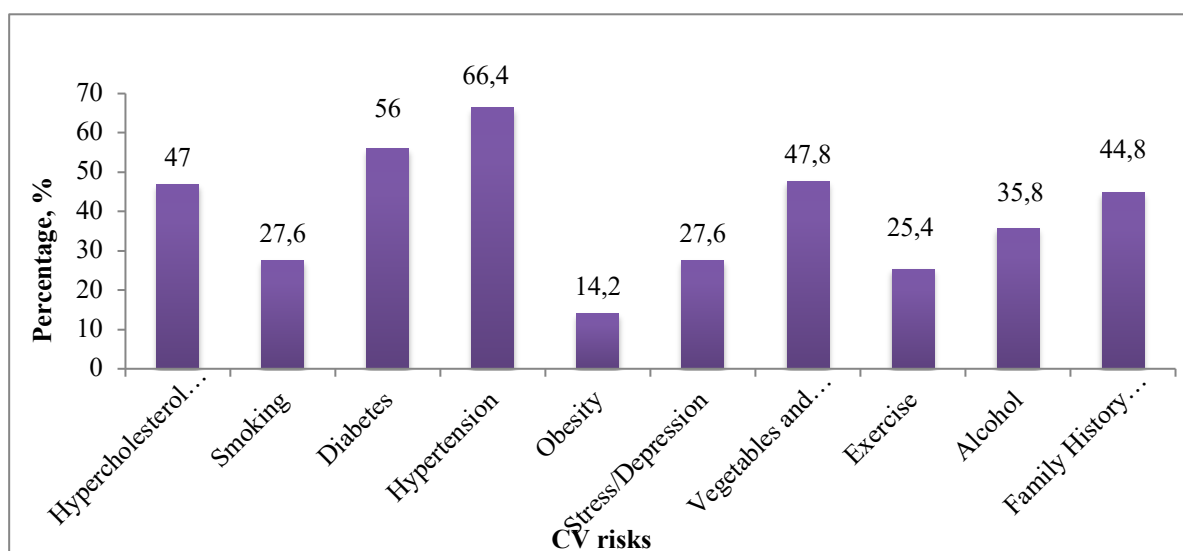


Figure 1: Medical History

3.2 The Overall Post AMI State

Following an AMI many patients feared of having another heart attack or AMI (n = 74, 55.2%) while others were worried (n = 83, 62.4%) (Figure 2). In this early stage, most patients resolved to improve their lives. They resolved to improve their eating habits (n = 97, 73.5%), goals (n = 94, 71.8%), relationships (n = 89, 67.4%), exercise (n = 85, 63.9%), to increase their spirituality (n = 82, 62.1%), social activities (n = 73, 56.2%), and to turn to God (n = 87, 65.4%).

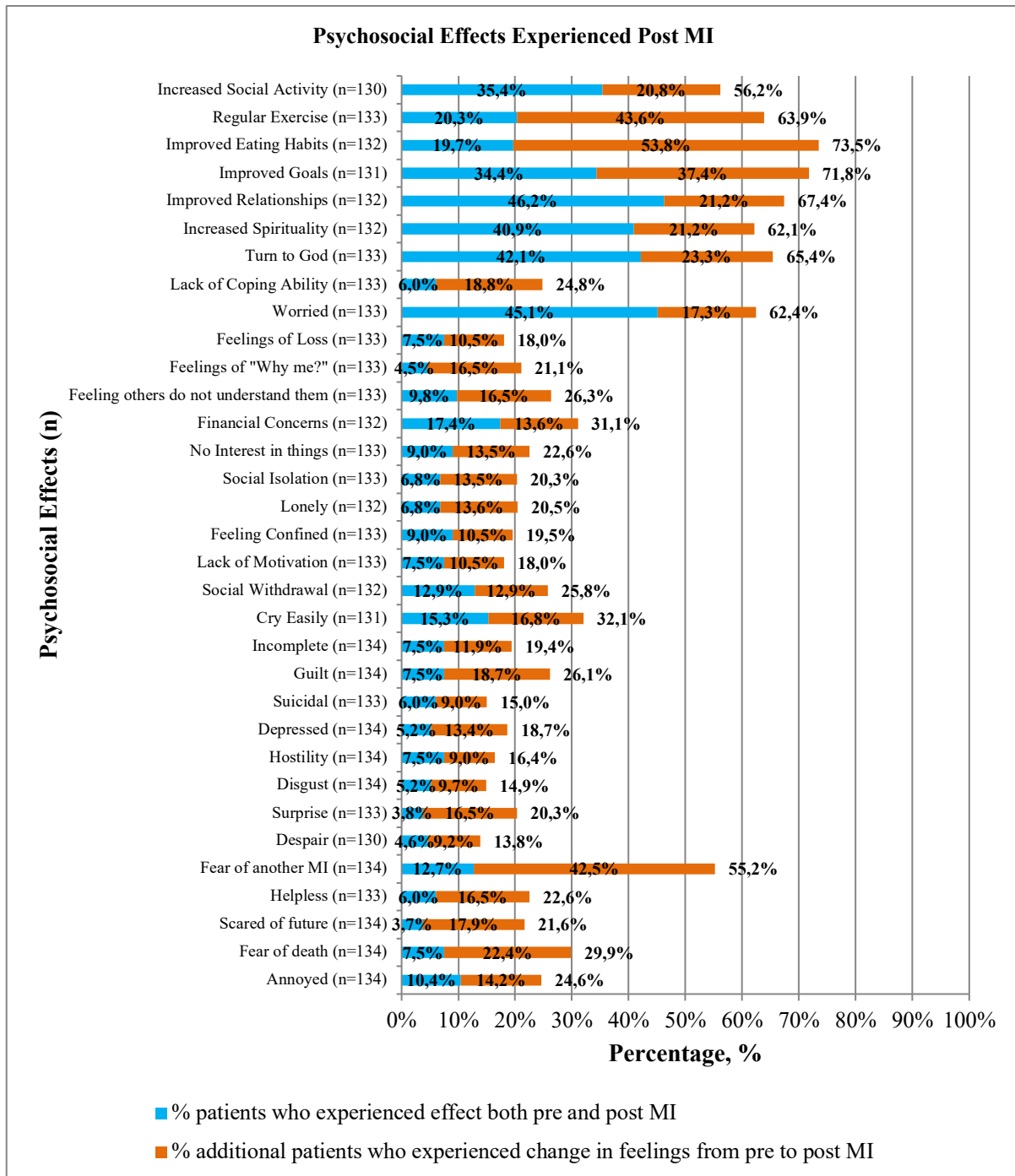


Figure 2: Psychosocial effects experienced post-AMII

Additional negative feelings that were experienced post AMI were fear of another MI (n = 57, 42.5%), fear of death (n = 30, 22.4%), lack of coping ability (n = 25, 18.8%), guilt (n = 25, 18.7%), and fear of the future (n = 24, 17.9%). (Figure 2).

Table 2: Odds ratios of significant associations

Indicator	Ref	OR	CI	P
Exercise/Fear of Another HA	Exercise Regularly	1.922	1.054, 3.505	0.010
Employment Status/Helpless	Employed	0.409	0.178, 0.941	0.028
Hypertension/Despair	Hypertensive	0.175	0.023, 1.299	0.045
Obesity/Despair	Obese	0.274	0.100, 0.749	0.010
Obesity/Surprise	Obese	0.357	0.168, 0.759	0.010

Hypercholesterolemia/Disgust	Hypercholesterolemia	0.266	0.077, 0.924	0.023
Obesity/Hostility	Obese	0.330	0.110, 0.990	0.046
Employment Status/ Depressed	Employed	0.403	0.162, 1.003	0.041
Hypertension/Suicidal	Hypertensive	1.156	1.065, 1.255	0.011
Family History of IHD/Guilt	Yes	1.994	1.048, 3.794	0.027
Obesity/Feels Incomplete	Obese	0.363	0.142, 0.930	0.037
Obesity/Crying	Obese	0.341	0.162, 0.720	0.007
Alcohol Consumption/Lack of Motivation	Yes (Alcoholic)	7.341	0.991, 54.404	0.017
Employment Status/Feeling of "Why me?"	Employed	2.136	0.973, 4.689	0.047
Obesity/Worried	Obese	0.381	0.181, 0.801	0.015
Obesity/Confined	Obese	0.300	0.113, 0.799	0.015
Diabetes Mellitus/Social Isolation	Diabetic	0.358	0.124, 1.031	0.042
Obesity/ Social Isolation	Obese	0.333	0.142, 0.781	0.013
Ethnicity/Feeling No Interest	African	0.348	0.147, 0.828	0.019
Obesity/Feeling of Loss	Obese	0.257	0.130, 0.511	0.000
Hypertension/Lack of Coping	Hypertensive	0.367	0.152, 0.887	0.014
Obesity/ Lack of Coping	Obese	0.490	0.260, 0.925	0.041
Exercise/Improved Relationships	Exercise Regularly	0.730	0.577, 0.923	0.033
Hypertension/Improved Relationships	Hypertensive	1.377	1.082, 1.753	0.016
Family History of IHD/ Improved Relationships	Yes	0.664	0.512, 0.861	0.002
Support/Improved Goals	Has Support	0.198	0.032, 1.217	0.001
Hypertension/Improved Goals	Hypertensive	1.299	1.035, 1.630	0.036
Family History of IHD/ Improved Goals	Yes	0.753	0.593, 0.958	0.021
Exercise/ Improved Eating Habits	Exercise Regularly	0.754	0.617, 0.920	0.030
Stress and Depression/ Improved Eating Habits	Yes	0.764	0.622, 0.939	0.026
Hypertension/ Improved Eating Habits	Hypertensive	1.347	1.093, 1.660	0.011
Exercise/ Increased Regular Exercise	Exercise Regularly	0.632	0.503, 0.794	0.002
Age/ Increased Social Activity	>45	0.345	0.099, 1.204	0.021
Stress and Depression/ Increased Social Activity	Yes	1.579	0.993, 2.500	0.030
Obesity/ Increased Social Activity	Obese	1.972	0.927, 4.196	0.029
Age/Increased Spirituality	>45	0.466	0.179, 1.215	0.033
Alcohol//Increased Spirituality	Yes	1.409	0.989, 2.008	0.038
STEMI/NSTEMI/Increased Spirituality	NSTEMI	0.678	0.496, 0.927	0.034
Obesity/Increased Spirituality	Obese	1.646	0.905, 2.991	0.045
Sex/Turn to God	Female	0.670	0.515, 0.871	0.006
Employment Status/Turn to God	Employed	1.821	1.289, 2.573	0.000
Alcohol/Turn to God	Yes	1.395	0.996, 1.953	0.034
STEMI/NSTEMI/Turn to God	NSTEMI	0.581	0.448, 0.753	0.001

3.3 Associations/degree of associations (OR) of significant indicators

In general, there were no significant differences in the feelings between both sexes except for a larger percentage of males turning to God ($P = 0.006$). The self-claimed obese patients had significant associations with at least 12 variables with a majority being psychological. Significant differences were also found with employment and helplessness ($P = 0.028$), depression ($P = 0.041$), 'Why me?' ($P = 0.047$), and turning to God ($P = 0.000$). (Table 2)

The odds ratios of the significant associations are shown in Table 2. People who used alcohol were 7.341 times more likely to be associated with a lack of motivation post-AMI (OR: 7.341, CI: 0.991, 54.404, $P = 0.017$). Patients who exercised, or were employed were more likely to experience fear of another attack (OR: 1.922, $P = 0.010$) or a feeling of ‘Why me?’ (OR: 2.136, $P = 0.047$), respectively. Increased alcohol usage and obesity also led to increased spirituality (OR > 1). Hypertensive patients were more likely to be associated with suicidal tendencies, lack of coping mechanisms, and improved goals (OR >1) and the young, STEMI, male, and employed patients were more likely to resort to increased spirituality or turned to God (Table 2).

4. Discussion

4.1. Psychosocial and financial sequelae post-AMI

In the immediate post-AMI period, patients’ feelings were prominent. Although priority care by healthcare providers focused on pharmacological and surgical treatment, many patients, even in the first few days, experienced significant psychosocial feelings: both negative and positive. However, few studies have reported on the immediate post-AMI period.

Many patients in the overall sample of post-AMI patients in this study experienced varied feelings: felt that others did not understand them (26.3%), guilt (26.1%), helplessness (22.6%), hostility (16.4%), loneliness (20.5%), and a sense of loss (18.0%). Among the patients with poor health, similar feelings of loneliness, social isolation and withdrawal, social deficiencies, depression, and anxieties have been identified (Stickley et al., 2015; Valtorta, Kanaan, Gilbody, Ronzi & Hanratty, 2016). Moreover, intense levels of distress and fear of dying post-acute coronary syndrome were also noted among 21.7% of the patients in a hospital (Step toe et al., 2011).

Among the overall population, common positive thoughts and resolutions included improved life goals and expectations (71.8%), eating habits (73.5%), spirituality (62.1%), and increased participation in social activities (56.2%), as well as turning to God (65.4%). Similar findings of increased positivity were reported by Kroemeke, in a study conducted 1–6 months post-AMI (Kroemeke, 2016). In addition, Huffman et al. in their analysis also stated that optimism, measured 2 weeks after acute coronary syndrome (ACS), was associated with greater physical activity at 6 months (Huffman et al., 2015) while Tello, concluded that patients who scored the highest in an optimism questionnaire had a reduced risk of death due to heart attacks (Tello, 2019).

The financial concerns reported by 31.1% of the participants in this study have also been identified by other researchers. Financial barriers post-AMI affected younger patients more commonly; however, this did not vary by sex (Beckman et al., 2016). Moreover, in a study of AMI patients over 12 months, 18.1% of the patients experienced financial barriers (Rahimi, Spertus, Reid, Bernheim & Krumholz, 2007).

This study revealed that in early post-AMI, the overall self-confessed depression, determined by the two key questions of the PHQ9 (American Psychological Association [APA], 2011) was 18.7%. However, a study by Murphy et al. during early convalescence among post-AMI patients, which was conducted over a period of 2 months prior to the event to 12 months after the event, reported a significant prevalence of loneliness, anxiety (28%), and depression (17%) (Murphy, Le Grande, Alvarenga, Worcester & Jackson, 2020). The European Society of Cardiology also reported on the presence of anxiety and depression (15% at 2 months post-MI) in 20% of the patients experiencing emotional distress (Olsson, 2019). Furthermore, Maqsood et al. found the frequency of depression in MI patients who were interviewed on the third day of admission, to be 27.24% (Maqsood et al., 2017), and another study conducted by the Cleveland Clinic showed that up to 15% of the patients with cardiovascular disease experienced major depression (Pozuelo, 2019).

In this study of post-AMI patients, the depressive symptoms varied between 15–32%: helplessness (22.6%), crying easily (32.1%), suicidal thoughts (15.0%), helplessness (22.6%), disgust (14.9%), and crying (32.1%). A study that assessed the prevalence and persistence of symptoms of depression and anxiety during the first 12 months post MI revealed that more than half of the patients with complete Beck’s Depression Inventory (BDI) and anxiety data experienced either elevated symptoms of anxiety or depression (Lane, Carroll, Ring, Beevers and Lip, 2002). Furthermore, a study by Hasanović et al. found suicidal thoughts, accompanied by helplessness/vulnerability,

disgust/anger, crying easily/being easily hurt, loneliness and social withdrawal with depression occurring in approximately one out of every five patients with an AMI during their initial hospitalization (Hasanović, Čizmić & Jašarević, 2017). In addition, a study by Kaptein et al. found that the prevalence of ‘significant depressive symptoms ranged from 22.7–25.5% throughout the post-MI year’ (Kaptein, de Jonge, van den Brink & Korf, 2006). A study conducted by Silverman et al., 2019, has revealed that the presence of depressive symptoms increased the risk of cardiac events and was associated with tragic outcomes (A. Silverman, Herzog & D. Silverman, 2019) and the likelihood of death also increased, according to a study by Lissåker et al., which was conducted 2 and 12 months post-MII (Lissåker, Norlund, Wallert, Held & Olsson, 2019). Moreover, in a study of AMI patients ($N = 154$) conducted within days of AMI and at 3 months, linear regression explained ‘23% of the variance in MI-induced PTSS-symptoms’ (Ledermann et al., 2020).

4.2. Associations of socio-demographics and Psychosocial feelings.

In general, there were no significant widespread differences in feelings between both sexes except for a larger percentage of males turning to God (OR: 0.670, $P = 0.006$). Other studies investigating patients with heart failure revealed that they experienced spiritual well-being (Flint, Fairclough, Spertus & Bekelman, 2019). In addition, self-claimed obese patients showed significant associations, mainly with psychological factors. Obese patients are a subgroup that suffers from low self-esteem (Moradi, Mozaffari, Askari & Azadbakht, 2020) may have been responsible for these associations.

Those who resolved to exercise or were employed were more likely to have a fear of another attack or a feeling of “Why me?” (OR: 2.136, $P = 0.047$), respectively. This may have been due to a positive personality who could not see themselves facing another episode (Robinson, 2014). Increased alcohol usage and obesity also led to increasing spirituality (OR > 1). The presence of a comorbidity, hypertension, led to more negative feelings such as suicidal tendencies and lack of coping. The association of comorbidities with negative feelings has also been reported by (Wu et al., 2019). This study revealed that the young, STEMI, male, employed patients are more likely resolve to increase their spirituality or turn to God. As has been reported in another study, these patients may have more to live for and expect more (Boehm, Chen, Koga, Mathur, Vie & Kubzansky, 2018). According to Norlund et al., “Previous depression/anxiety, female gender, younger age, smoking, born outside of the Nordic countries, neither employed nor retired and readmission due to cardiovascular events were strongly associated with emotional distress post-MII.” (Norlund, Lissåker, Wallert, Held Olsson, 2018).

The classification by Everson-Ross and Lewis (2005) of the psychological consequences of post-AMII (Everson-Rose & Lewis, 2005) was similar to the findings of our study, which identified negative and positive feelings (Figure 3). In order to recover from the initial emotional reaction to a heart attack, Olsson’s recommendation was ‘try to keep doing your usual activities, at least the positive ones...’ (European Society of Cardiology [ESC], 2019).

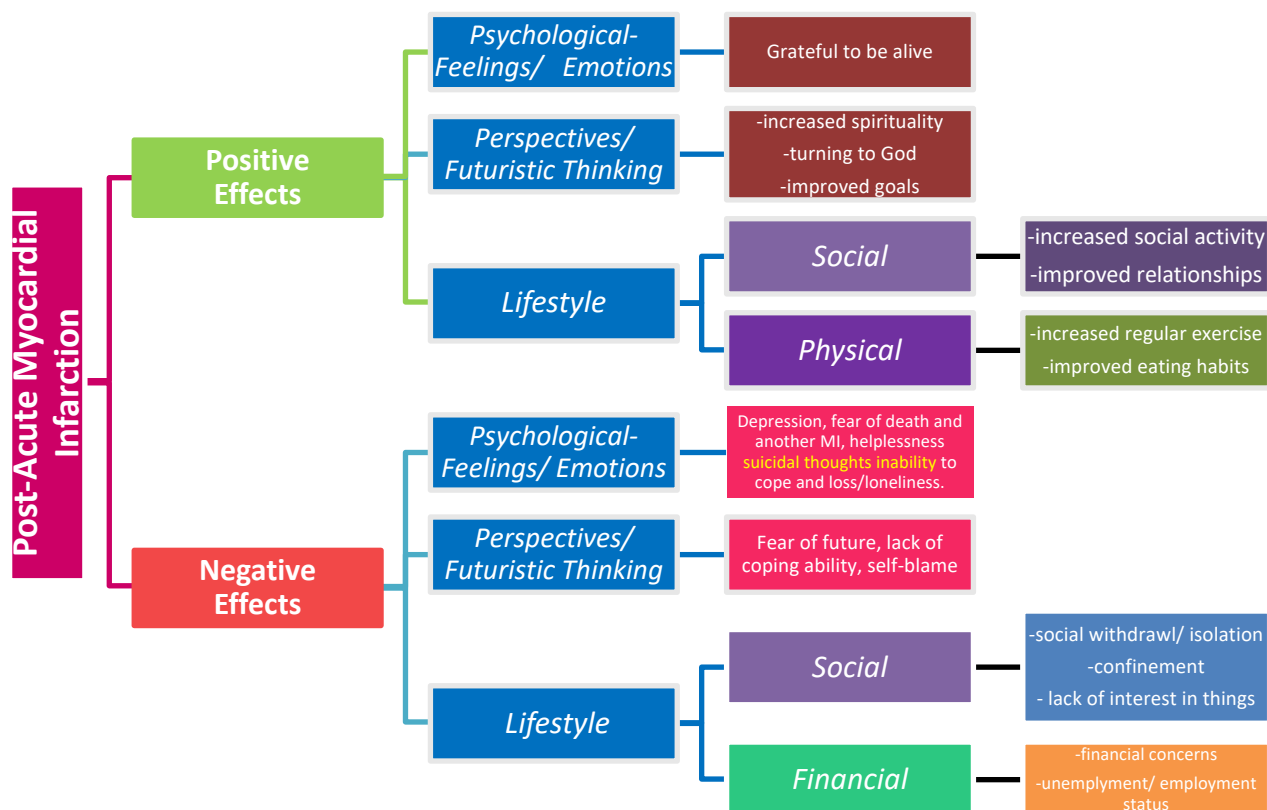


Figure 3: Schematic Diagram outlining the study

4.3 Limitations

The sample size was small, and the participants were selected from a single centre. Although the generalisation of findings may not be appropriate, because patient's feelings are similar, the information may still be applicable. The patients' responses were subjective and may not have reflected their exact feelings, especially their recall of the pre-AMI state. Their AMI experiences may have also influenced their recall of their pre-AMI responses. The findings of this study were dependent on the patients' self-reports and recall, which may have been unreliable for many patients. Many of the responses obtained may also have been exaggerated or under-reported, due to their subjective nature.

Acknowledgments

I wish to acknowledge Neeshana Bejai who assisted with data collection, the staff from the medical department, who helped with the research; and the participants, who gave their time to enter the study.

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