

Factors Affecting Patients' Outcomes after Acute Coronary Syndrome

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Abstract

Background: Acute Coronary Syndrome outcomes continue to be one of the most powerful measures of quality care in all health care settings for all caregivers. Nurse-sensitive outcome measurement is one of the most promising strategies that can enhance patient care and satisfaction of patients, families, and caregivers. **Aim:** the aim of this study was to identify factors affecting patients' outcomes after acute coronary syndrome. **Design:** A descriptive exploratory design. **Setting:** the study was conducted in the Coronary Care Units (CCU) at Ain Shames University hospital. **Study subjects:** A Purposive sample of 100 patients was included in this study. **Tools of data collection:** I-Interview questionnaire sheet. II-Patients' outcomes assessment tool. **Results:** The present study reveals that about half of the patients suffering from acute myocardial infarction with st-elevation. The present study reveals that less than half of the patients suffering from diabetes mellitus and hypertension. The present study revealed that all patients under study weren't compromised for peripheral tissue perfusion and medication response at physical health outcomes. These study finding that there are highly statistically significant positive correlations between physiological healths outcomes, psychological and social health total outcomes. **Conclusion:** Furthermore, there were many factors affecting patients' outcomes such as: work status, age of patients, educational level, monthly income, present and past health history. **Recommendations:** Health education regarding eliminating the risk factors of ACS. Establishment of centers for screening the clients at risk for ACS. More research into biological and psychosocial aspects of health outcomes is needed in order to increase the understanding of ACS and to develop more effective interventions.

Key words: Acute coronary syndrome, Patients outcomes.

Introduction

Acute coronary syndrome is major cause of death and disability worldwide. ACS, a common complication of coronary heart disease, is associated with more than 2.5 million hospitalizations worldwide each year and over seven million people every year die from coronary artery disease (CAD) accounting for 12.8 % of all death (Nicols, Townsend, Scarborough and Rayner, 2016).

There are many modifiable risk factors for ACS. Most risk factors that initiate cardiovascular disease have genetic, physiologic, behavioral, and environmental components. Non-modifiable risk factors include age, genetics, and gender. Modifiable risk factors comprise smoking, dyslipidemia, hypertension, and diabetes, with obesity and metabolic syndrome are commonly involved (Shrafeldin, et al., 2017).

The client with ACS generally presents at emergency department or physician office with complaints of severe chest pain. The pain may be unrelieved by nitroglycerin or may be more severe and of longer duration than previous angina episodes. The ECG is used in conjunction with blood levels of cardiac markers to differentiate between unstable angina and acute myocardial infarction. Coronary revascularization procedure may be performed within 48 hours if significant CHD is identified (*Kristen, 2014*).

During the planning step, the nurse develops a list of nursing interventions (actions) and client outcomes to promote healthy responses and to prevent, reverse, or decrease unhealthy responses. Outcomes, which are mutually established by the client and nurse, identify what the client will be able to do as a result of the nursing interventions (*Yinko, Pelletier, Behlouli and Pilot, 2014*).

Outcomes criteria for nursing diagnosis are client centered, time specific, and measurable. They are classified into three domains: cognitive (knowing), affective (feeling), and psychomotor (doing). The nurse considers all three domains to ensure holistic care (*Micklich, 2014*).

Using a comprehensive set of outcome measure as an integral part of daily clinical practice was a new practice. Through a sorting process, a set of core expected outcomes for complex cases was identified. These core outcomes were selected as the initial set to allow for aggregation of data across clinical specialties and patient populations (*Kristen, 2014*).

One way to improve health outcomes for patients with ACS is to establish a shared knowledge about the illness and formulate personal care plans that cover the hospital stay as well as possibly extending into primary care after discharge, based on the patients' point of view (*Andreas, Kerstin and Inger, 2016*).

Significance of the Study:

Coronary heart disease affects all aspects of a person's health related quality of life (*Khayyam-Nekouei, Neshatdoost, Yousefy, Sadeghi, and Manshaee, 2013*). ACS may contribute to health status declines including "independence loss" and "physical function decline." Despite the importance of these outcomes for prognosis and quality of life, their incidence and predictors have not been well described.

The nurses play a vital role in gathering information from the patient which helps determine the risk for poor outcomes. An astute assessment can mean the difference between minutes to beneficial treatment instead of hours (*Chan, Jones, Arnold and Spertus, 2014*). Therefore, it is necessary to study factors for ACS patients to make nurses applying effective nursing care and to achieve positive patient outcomes as well as avoid complications.

Aim of the Study:

This study aimed to:

- Identify factors affecting patients' outcomes after acute coronary syndrome.

Research Question

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To achieve the aim of this study the following research question was formulated:

1. What are the factors that affect biopsychosocial outcomes for patients with acute coronary syndrome?

Subjects and Methods

1-Technical Design:

The technical design includes research design, setting, subjects and tools for data collection.

Research design: A descriptive exploratory design was utilized to meet the aim of the study

Setting: The study was conducted in the Coronary Care Units (CCU) at Ain Shames University hospital, coronary care unit have approximately 29 beds at Intensive Care Unit and Six beds at intermediate care unit.

Subjects: A Purposive sample was recruited in this study. They were 37 females, and 63 males.

Inclusion Criteria:

Adult patient over 18 years diagnosed with recently acute coronary syndrome.

Exclusion Criteria:

Mentally, psychiatric patient, and patient on mechanical ventilated.

Study tools:-

It included the following parts

I. Interview questionnaire sheet (Appendix I): It was developed by researcher after reviewing the related literature: (*Brown, 2013; Molazem, Rezaei, Mohebbi, Ostovanand and Keshavarzi, 2013*). It was consisted of three parts:

First part: this part was concerned with patient's socio-demographic characteristics such as age, sex, marital status, education level, work status, type of work, housing condition (floor, elevator and ventilation), income per month and number of family members.

Second Part: this part was concerned with patients' present history for ACS and past health history for co morbid disease such as diabetes mellitus, hypertension ...etc.

Third part: this part was concerned with assessment of family risk factors such as diabetes mellitus, hypertension....etc.

II. Patients' outcomes assessment tool (Appendix II&III):

This tool was adopted from (*Moorhead, Johnson, Maas and Swanson, 2014*) and also adopted by researcher to fit research aim. This tool was used to assess biopsychosocial outcomes of the patients with ACS, this tool included 4 domains as follows:

First Domain: Physiological health outcomes:

This domain describe organic functioning of the patients with ACS that include the following parameters: Cardiac pump effectiveness, Circulation status, Vital signs status, Tissue perfusion: cardiac and peripheral,

Coagulation status, Elimination, Fluid & Electrolytes, Nutrition, Medication response, Self-care and Pain control.

➤ **Scoring system**

This domain consisted of (121) indicators, each one was scaled differently and based on ranges, these ranges mentioned in the tool (see appendix III). These ranges based on literature review as follows:

- 1) Cardiac pump effectiveness (*Trialists' Collaboration, 2008; Jefferson, et al., 2010; American Heart Association, 2018; Simons and Gaher, 2015; Pfaffenberger, et al., 2013; Campeau, 2012; Schroth, 2015*).

Total score was (23), it was categorized as follows:

- <8 → not compromised.
- ≥8-15 → moderately compromised.
- >15-23 → severely compromised.

- 2) Circulation status (*Burchell and Powers, 2011; Rieser, 2013*).

Total score was (6), it was categorized as follows:

- <3 → not compromised.
- ≥3-4 → moderately compromised.
- >4-6 → severely compromised.

- 3) Vital signs status (*Alexis, 2010; Elliott and Coventry, 2012; Walsh, et al., 2013*).

Total score was (6), it was categorized as follows:

- <3 → not compromised.
- ≥3-4 → moderately compromised.
- >4-6 → severely compromised.

- 4) Tissue perfusion (cardiac) (*Jenkins and Gerred, 2011; Pagana and Pagana, 2017*).

Total score was (8), it was categorized as follows:

- <3 → not compromised.
- ≥3-5 → moderately compromised.
- >5-8 → severely compromised.

- 5) Tissue perfusion (peripheral) (*Moorhead, et al., 2014*).

Total score was (17), it was categorized as follows:

- <6 → not compromised.
- ≥6-11 → moderately compromised.
- >11-17 → severely compromised.

- 6) Coagulation status (*Pagana and Pagana, 2017*).

Total score was (13), it was categorized as follows:

- <5 → not compromised.
- ≥5-9 → moderately compromised.
- >9-13 → severely compromised.

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7) Elimination (*Moorhead, et al., 2014*).

Total score was (11), it was categorized as follows:

- <4→ not compromised.
- ≥4-8→moderately compromised.
- >8-11→severely compromised.

8) Fluid and Electrolytes (*Pagana and Pagana, 2017*).

Total score was (16), it was categorized as follows:

- <6→ not compromised.
- ≥6-11→moderately compromised.
- >11-16→severely compromised.

9) Nutrition: This part divided into 2 subtitles:

- Nutrition status (*Garrouste-Orgeas, et al., 2004*).
- Nutrition status (Biochemical measures) (*Pagana and Pagana, 2017; Lemone, et al., 2015*).

Total score was (15), it was categorized as follows:

- <6→ not compromised.
- ≥6-10→moderately compromised.
- >10-15→severely compromised.

10) Medication response (*Moorhead, et al., 2014*).

Total score was (20), it was categorized as follows:

- <7→ not compromised.
- ≥7-14→moderately compromised.
- >14-20→severely compromised.

11) Self-care (activity of daily living)(*Moorhead, et al., 2014*).

Total score was (20), it was categorized as follows:

- <7→ not compromised.
- ≥7-14→moderately compromised.
- >14-20→severely compromised.

12) Pain control (*Moorhead, et al., 2014*).

Total score was (28), it was categorized as follows:

- <9→ not compromised.
- ≥9-18→moderately compromised.
- >18-28→severely compromised.

-It was considered that the lower the score the better physiological outcomes.

Second Domain: Psychological health Outcomes:

This domain describes psychological functioning and includes two parameters as follows:

1. Psychological well-being that includes (body image, self-esteem and identity)

2. Self-control that includes (anxiety control)

Scoring system:-

This domain consisted of (40) indicators, each one were scaled as follows:

-For body image and self-esteem, the scale was as follows:

Consistency positive = 0
Sometimes positive = 1

Never positive = 2

Total score for body image was (14), it was categorized as follows:

- <6→ not compromised.
- $\geq 6-10$ →moderately compromised.
- >10-14→severely compromised.

Total score for self-esteem was (32), it was categorized as follows:

- <12→ not compromised.
- $\geq 12-22$ →moderately compromised.
- >22-32→severely compromised.

-For identity and anxiety control, the scale was as follows:

Consistency demonstrate = 0
Sometimes demonstrate = 1

Never demonstrate = 2

Total score for identity was (8), it was categorized as follows:

- <4→ not compromised.
- $\geq 4-6$ →moderately compromised.
- >6-8→severely compromised.

Total score for self-control was (26), it was categorized as follows:

- <10→ not compromised.
- $\geq 10-18$ →moderately compromised.
- >18-26→severely compromised.

The lower the score the most positive outcomes.

Third Domain: Social health Outcomes:

This domain describes social functioning which include two parameters as follows:

1-Social inter action that includes (role performance, social involvement and social support).

2-Psychosocial adaptation that includes (acceptance health status and coping).

➤ **Scoring system**

This domain consisted of (60) indicators, each one were scaled as follows:

-For role performance, the scale was:

Adequate = 0

Moderately adequate = 1

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Rarely adequate = 2

Total score for role performance was (18), it was categorized as follows:

- <7→ not compromised.
- ≥7-12→moderately compromised.
- >12-18→severely compromised.

-For social involvement, social support and acceptance health status, the scale was as follows:

Extensive = 0

Moderate = 1

None = 2

Total score for social involvement was (16), it was categorized as follows:

- <6→ not compromised.
- ≥6-10→moderately compromised.
- >10-16→severely compromised.

Total score for social support and acceptance health status was (24), it was categorized as follows:

- <9→not compromised.
- ≥9-16→moderately compromised.
- >16-24→severely compromised.

-For coping, the scale was as follows:

Consistency demonstrate = 0
Sometimes demonstrate = 1

Never demonstrate = 2

Total score for coping was (38), it was considered as follows:

- <14→ not compromised.
- ≥14-26→moderately compromised.
- >26-38→severely compromised.

The lower the score the most positive outcomes.

Forth Domain: Perceived health outcomes:

This domain describes impressions of an individual's health which include one parameter (Health and life quality that includes (spiritual well-being).

➤ Scoring system

This domain consisted of (14) indicators, each one were scaled as follows:

- Not compromised = 0
- Moderately compromised=1
- Extremely compromised= 2

Total score for health and life quality was (28), it was categorized as follows:

- <10→ not compromised.
- ≥10-18→moderately compromised.
- >18-28→severely compromised.

The lower the score the most positive outcomes.

2. Operational design:

It includes the preparatory phase, content validity, reliability, pilot study and field work:

A) The preparatory phase:

It includes reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles and internet periodicals to develop tools for data collection.

B) Validity of the study tool:

Validity was tested through a jury of (7) experts from Medical Surgical Nursing Department, Ain Shams University, (1) professor and (6) assistant professors. The experts reviewed tools for clarity, relevance, comprehensiveness, simplicity and applicability, minor modifications was done.

C) Reliability of the study tool:

Testing reliability of proposed tools was done statistically by alpha Cronbach test for the following:

As general= 0.8681

Questionnaire sheet= 0.806

Patients' outcomes assessment tool = 0.791

D) A Pilot study:

A pilot study was carried out on 10% of the patients with Acute Coronary Syndrome (ACS) in coronary care unit in Ain Shams University hospital to test clarity, efficiency and applicability of the tools. There was no modification done on the study tool after pilot study, so that, the

patients who included in the pilot study were included in the main study group.

E) Field work:

- The Purpose of the study was simply explained to the patient who agrees to participate in the study prior to any data collection.
- The tools of data collection was filled in and completed by the researcher. It took about 20-30 minutes for each patient.
- Data collection was done 4 days per week (Sunday, Monday, Tuesday & Wednesday). Start in June2016, it took 4 hours from (9 am to 1 pm and from 3pm to 7 pm) for 3 months in the previously mentioned setting in morning and afternoon shifts.

3- Administrative design:

An official permission was be obtained from the faculty of nursing Ain Shams University to the directors of Ain Shames University Hospital in which the study was be conducted. The study was carried out with full cooperation of the different levels of authority after official letters were issued explaining the purpose of the study and requesting consent to collect data.

4- Statistical design:

Data entry and analysis were organized, categorized, analyzed using a personal computer using SPSS (statistical program for social science). Data were presented using descriptive statistics in the form of frequencies and percentages; description of qualitative variables as

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mean, SD and range, Statistical significant was considered as follows:

High significant (HS) $p < 0.001$

-Significant (S) $P \leq 0.05$

-No significant (NS) $P > 0.05$

Ethical considerations

The research approval was be obtained from ethical committee in Faculty of Nursing, Ain Shams

University before starting the study. The researcher clarified the objective and aim of the study to patients who are included in the study. The researcher assured maintaining anonymity and confidentiality of subjects' data. All patients was be informed that they are allowed to choose to participate or not in the study and that they had the right to withdraw from the study at any time without penalties.

Result

Table (1-A): Frequency and percentage distribution of socio-demographic characteristics of the studied patients (no=100).

	Items	No	%
Age	From (20≤30)	4	4.0%
	(30≤40)	7	7.0%
	(40≤50)	13	13.0%
	(50≤60)	40	40.0%
	Over 60	36	36.0%
Sex	Female	37	37.0%
	Male	63	63.0%
Marital status	Single	15	15.0%
	Married	85	85.0%
Education level	Illiterate	36	36.0%
	Read and write	32	32.0%
	Secondary	15	15.0%
	University	14	14.0%
Work Status	Others	3	3.0%
	Work	46	46.0%
	No Work	54	54.0%
Type of work	Clerical	30	30.0%
	Technical	16	16.0%

Table (1-A): shows that, 40% of the studied patients their age were ranged between (50≤60) years old, 63% were males, 36% were illiterate, and 54% were jobless.

Table(2):Frequency and percentage distribution of physiological outcomes for the patients under study(n=100).

Items	Not compromised		Moderately compromised		Extremely compromised		mean±SD
	NO	%	NO	%	NO	%	
Cardiac pump effectiveness	94	94%	6	6%	0	0.0%	7.48±3.96
Circulation status	89	89%	10	10%	1	1%	1.18±1.10
Vital signs status	89	89%	11	11%	0	0.0%	1.71±2.11
Cardiac tissue perfusion	10	10%	90	90%	0	0.0%	5.71±1.31
peripheral tissue perfusion	100	100%	0	0.0%	0	0.0%	2.08±1.13
Coagulation status	83	83%	17	17%	0	0.0%	2.11±2.79
Elimination	71	71%	22	22%	7	7%	2.22±2.81
Fluid & electrolyte	94	94%	6	6%	0	0.0%	3.03±2.88
Nutritional status	82	82%	18	18%	0	0.0%	3.90±3.00
Medication response	100	100%	0	0.0%	0	0.0%	4.83±2.86
Self-care (activity of daily living)	81	81%	19	19%	0	0.0%	5.30±7.97
Pain control	83	83%	17	17%	0	0.0%	10.51±4.21

Table (2):shows that, all patients under study weren't compromised for peripheral tissue perfusion and medication response (100%).Additionally, the studied patients weren't compromised for cardiac pump effectiveness, fluid &electrolyte ,circulation status ,vital signs, coagulation status, pain control, nutritional status, and self-care, and 94%,94%,89%,89%,83%, 83, 82%,81%,respectively.Whereas 90% and 22% of the patients were moderately compromised for cardiac tissue perfusion and elimination respectively.

Table (3): Frequency and percentage distribution of psychosocial and perceived outcomes for the patients under study (n=100).

Items	Not compromised		Moderately compromised		Extremely compromised		Mean±SD
	NO	%	NO	%	NO	%	
Psychological outcomes							
Psychological well-being:							
-Body image	47	47%	53	53%	0	0.0%	7.44±1.96
-Self –esteem	42	42%	58	58%	0	0.0%	20.26±6.52
-Identity	49	49%	51	51%	0	0.0%	5.40±2.97
self-control:							
- Anxiety control	43	43%	57	57%	0	0.0%	15.06±7.32
Social outcomes							
Social interaction:							
-Role performance	68	68%	32	32%	0	0.0%	10.02±5.54
- Social involvement	13	13%	63	63%	24	24%	11.60±3.66
- Social support	22	22%	78	78%	0	0.0%	15.88±4.21
Psychosocial adaption:							
-Acceptance of health status	39	39%	61	61%	0	0.0%	14.98±7.55
- Coping	28	28%	72	72%	0	0.0%	23.53±10.69
Perceived (spiritual)outcomes							
Health and life quality:							
-Spiritual well being	65	65%	35	35%	0	0.0%	17.22±9.09

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Table (3): shows that, Regarding psychological well-being, the patients under the study were moderately compromised for self-esteem, anxiety control, body image, and identity, 58%,57%,53%,51%, respectively. Regarding social outcomes, the table reveals that78%, 72%, 63%, and 61% of the patients were moderately compromised for social support, coping, social involvement, and acceptance of health status respectively. The table also clarifies that 65% of the patients weren't compromised for spiritual well-being.

Table (4): Correlation of the four main domains of health outcomes (biopsychosocial and perceived outcomes) (no=100).

		Psychological health outcomes	Social health outcomes	Perceived health outcomes
Physiological health outcomes	Pearson Correlation Coefficient	.285	.272	.050
	P value	0.004**	0.006**	0.622
Psychological health outcomes	Pearson Correlation Coefficient		.838	.720**
	P value		0.000**	0.000**
Social health outcomes	Pearson Correlation Coefficient			.748
	P value			0.000**

** Highly Significant (P < 0.01)

Table (4): demonstrates that, there area highly statistically significant positive correlations between physiological outcomes with psychological and social outcomes (P < 0.01). There are also positive correlation between psychological outcomes and, social and perceived outcomes (P < 0.01).In addition to, there is positive correlation between social and perceived outcomes (P < 0.01

Table (5): Relation between four main scale (biopsychosocial& perceived outcomes) and age (no=100)

		AGE		Std.	F	P value	
		N	Mean	Deviation			
Physiological health total outcomes	Less or equal 40 years	11	19.60	3.03	36.58	0.00000	p < 0.001 HS
	40 to 50 years	13	20.84	7.15			
	50 to 60 years	40	21.49	5.53			
	60 years or more	36	34.56	7.21			
Psychological health total outcome	Less or equal 40 years	11	48.71	20.01	9.35	0.00002	p < 0.001 HS
	40 to 50 years	13	57.15	15.17			
	50 to 60 years	40	50.39	16.64			
	60 years or more	36	67.76	12.24			
Social health total outcome	Less or equal 40 years	11	51.52	26.03	7.70	0.00011	p < 0.001 HS
	40 to 50 years	13	57.83	14.58			
	50 to 60 years	40	58.29	18.63			
	60 years or more	36	74.56	15.33			
perceived health outcome	Less or equal 40 years	11	63.64	32.33	0.91	0.43844	p > 0.05 NS
	40 to 50 years	13	57.69	34.44			
	50 to 60 years	40	56.25	34.32			
	60 years or more	36	68.06	29.65			

Table (5): shows the relation between (biopsychosocial &perceived outcomes) and age. It reveals that, there are highly statistically significant relation between age and

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physiological, psychological and social health outcomes ($p < 0.01$). Whereas, there are no significant relation between age and perceived health outcomes ($p > 0.05$).

Table (6):Relation between domains of health outcomes (biopsychosocial & perceived outcomes) and work status: (no=100)

	Work Status	N	Mean	Std. Deviation	t	P Value	
Physiological health total outcomes	Work	46	22.15	7.78	-4.17	0.00007	p < 0.001 HS
	Does not work	54	29.10	8.73			
Psychological health total outcomes	Work	46	52.30	18.41	-2.78	0.00649	p < 0.01 HS
	Does not work	54	61.62	15.08			
Social health total outcomes	Work	46	57.67	20.02	-2.74	0.00733	p < 0.01 HS
	Does not work	54	68.17	18.32			
Perceived health outcomes	Work	46	59.78	35.93	-0.49	0.62769	p > 0.05 NS
	Does not work	54	62.96	29.44			

Table (6): shows the relation between (biopsychosocial and perceived outcomes) and work status. It reveals that, there are highly statistically significant relation between work status and physiological, psychological and social health outcomes ($p < 0.01$).Whereas, there is no significant relation between work status and perceived health outcomes ($p > 0.05$).

Table (7): Relation between four main scale (biopsychosocial& perceived outcomes)and present health history: (no=100)

	Present Health	N	Mean	Std. Deviation	F	P value	
Physiological health total outcomes	Unstable angina	28	20.98	6.19	6.60	0.00206	p < 0.01 HS
	Acute myocardial infarction with ST elevation	51	27.55	9.47			
	Acute myocardial infarction without ST elevation.	21	28.45	8.63			
Psychological health total outcomes	Unstable angina	28	50.76	17.62	3.16	0.04686	p < 0.05 S
	Acute myocardial infarction with ST elevation	51	59.06	17.28			
	Acute myocardial infarction without ST elevation.	21	61.90	14.76			
Social health total outcomes	Unstable angina	28	56.28	20.65	2.64	0.07616	p ≈ 0.05 Almost S
	Acute myocardial infarction with ST elevation	51	65.54	20.02			
	Acute myocardial infarction without ST elevation.	21	67.42	15.84			
Perceived health outcomes	Unstable angina	28	51.79	31.86	1.80	0.17115	p > 0.05 NS
	Acute myocardial infarction with ST elevation	51	64.71	32.08			
	Acute myocardial infarction without	21	66.67	32.91			

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ST elevation.

Table (7): shows the relation between (biopsychosocial and perceived outcomes) and present history. It reveals that, there are highly statistically significant relation between present history and physiological health outcomes ($p < 0.01$), as well as there is statistically significant relation between present history and psychological health outcomes ($p < 0.05$). Whereas, there are no statistically significant relation between present history and, social and perceived health outcomes ($p > 0.05$).

Table (8): Relation between four main scale (biopsychosocial & perceived outcomes) and Past Health history (Number of concomitant Disease): (no=100)

	Past Health history	N	Mean	Std. Deviation	F	P value	
Physiological health total outcomes	No past history	18	20.50	7.38	4.42	0.00587	$p < 0.01$ HS
	One disease	35	24.82	7.45			
	Two diseases	28	28.37	10.22			
	Three diseases	19	29.38	8.70			
Psychological health total outcomes	No past history	18	54.56	17.75	3.02	0.03334	$p < 0.05$ S
	One disease	35	54.73	15.98			
	Two diseases	28	55.32	19.91			
	Three diseases	19	67.73	10.98			
Social health total outcomes	No past history	18	64.27	17.88	3.74	0.01361	$p < 0.05$ S
	One disease	35	58.24	20.15			
	Two diseases	28	60.71	21.06			
	Three diseases	19	75.74	13.55			
Perceived health outcomes	No past history	18	63.89	33.46	1.53	0.21133	$p > 0.05$ NS
	One disease	35	60.00	31.62			
	Two diseases	28	53.57	35.82			
	Three diseases	19	73.68	25.65			

Table (8): shows the relation between (biopsychosocial and perceived outcomes) and past health history. It reveals that, there are highly statistically significant relation between past health history and physiological health outcomes ($p < 0.01$), and statistically significant relation with psychological and social health outcomes ($p < 0.05$). Regarding perceived health outcomes, there is no statistical significant relation with patients' past history ($p > 0.05$).

Discussion

ACS is a group of clinical symptoms well-matched with acute myocardial ischemia, representing the most important cause of death worldwide, with a great clinical and financial impact. The clinical types of ACS includes unstable angina and acute myocardial infarction (AMI) with or without ST-segment elevation (*Shrafeldin, et al., 2017*).

The current study was carried out aiming to identify factors affecting patients' outcomes after acute coronary syndrome through assessing the factors that affect biopsychosocial outcomes for patients with acute coronary syndrome.

The first part regarding socio-demographic characteristics of studied patients, the current study showed that two fifths of the studied patients their age was at range ($50 \leq 60$) years old and near

to two thirds of the patients were males. That might be because male patients were at greater risk in their work environment and most of them are active smokers and protection of females by female hormones before the age of menopause. This finding supported by **Brunner, (2017)** who mentioned that risk factors for the development of coronary artery diseases “CAD” increases with age and male gender.

In accordance with these results, **Wit, Bos-Schaap, Hautvast, R Heestermans and Umans (2012)** reported in a published study entitle “Nursing role to improve care to infarcted patients and patients undergoing heart surgery” that three quadrant of the patients were males. While the present finding is inconsistent with **Ramadan (2012)** in Ain Shams University who found in a study about “Health related quality of life for patients after open surgery” that half of the study subjects were less than forty years old and two thirds of them were females.

Marital status, the current study showed that the most of the studied patients were married. This might be due to that all of the studied patients over 40 years old, and usually by this age they are becoming married according to Egyptian society culture. This finding is in the same line with what was reported by **Durmaz et al. (2009)** in a study entitle “Factors affecting quality of life in patients with coronary heart disease” that, majority of the studied patients with MI were married. However this result is inconsistent with **Hadi Khafaji et al. (2012)** who found in a study entitle “Marital status and outcome of patients presenting with acute coronary syndrome: an observational report” that the majority of the study subjects affected with MI was unmarried.

Educational level, the result of this study revealed that more than one third of studied patients were illiterate. This result is in agreement with **Ramadan (2012)** who mentioned that more than two fifths of studied subjects were illiterate. This may be referred that this study group and Ramdans' study group were treated at Ain Shams University Hospitals, that is a center which served poor sector of patients who is a low income group.

Work status, the current study revealed that more than half of the studied patients were jobless. This might be due to most of the study subjects were within ($50 \leq 60$) years, and usually by this age they are becoming retired according to Egyptian law. This result goes in the same line with a study conducted by **Worcester et al. (2014)** entitle “Resumption of Work after Acute Coronary Syndrome or Coronary Artery Bypass Graft Surgery” who stated that less than half of the patients not work and it may increase stress of being dependent on others. This may be evident by this study results that showed a high statistical significant relation between job status and monthly income to psychological outcomes.

Physiological outcomes, the present study revealed that all patients under study weren't compromised for peripheral tissue perfusion and medication response. Additionally, most of patients weren't compromised for cardiac pump effectiveness, circulation status, vital signs, coagulation status, fluid and electrolyte, nutritional status, self-care, and pain control. Whereas majority of the patients and more than one fifth of them were moderately compromised for cardiac tissue perfusion and elimination. This may be due to they were hospitalized in intensive care units

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and under controlled medical & nursing care. This study is consistent with *Mercedes, Ana, Hannia and Josiemer (2016)* who found in a study entitled "Lifestyle Cardiovascular Risk Score, Genetic Risk Score, and Myocardial Infarction" that about more than half of the patient had cardiac pump effective, vital signs stable, fluid and electrolytes balanced and the patient able to control pain after any attack.

Psychological outcomes, in the present study revealed that more than half of the studied patients were moderately compromised for body image, self-esteem, identity, and anxiety control. This finding consistent with *Pelletier et al.(2016)* who found in a study entitled "Sex Versus Gender-Related Characteristics" that about two third of the patient suffering from anxiety after ACS. This may be due to they are in acute phase and hospitalized in intensive care units. The patients felt that the onset of the illness was unexpected and irrespective.

Social and perceived outcomes, in the present study revealed that more than two thirds of the studied patients had not compromised role performance, while less than two thirds and more than three quadrants of patients had moderate social support and moderately compromised for coping effectively to illness respectively. The study also revealed that less than two thirds of patients had moderate involvement of his society, and less than three quarters of patients had moderate acceptance of illness. One of the noticeable finding of this study that near two thirds of the patients weren't compromised for spiritual wellbeing). This may be evident by this study results showed that the most of the studied patients were married and had relative who supported them in their illness. This study is consistent with

Karen, Louise and Hassan (2018) who found in a study entitled "An exploration of the subjective social status construct in patients with acute coronary syndrome" that less than two thirds of the patients accept, cope with illness and can return and engage in society.

Correlation between the four main domains of health outcomes (biopsychosocial and perceived outcomes), revealed that there were highly statistically significant positive correlation between physiological health outcomes with each of psychological and social health outcomes, that is when the patients physically fit after ACS such as (cardiac pump effective, vital signs normal, cardiac and peripheral tissue perfusion are normally, fluid and electrolytes are normally, effective response of medication administration, able to do daily living activity and also control of pain) all these indicators will affect psychological wellbeing and social interaction such as (body image, increased self-esteem, identity, also control of his anxiety, acceptance of self-control anxiety, role performance, and coping of illness). This finding suggests that biological, psychological, and social factors are all interlinked.

This study is consistent with *Pelletier et al.(2016)* who mentioned that, there was a positive correlation between physiological health outcomes such as (vital signs, circulation status, and tissue perfusion) with psychological and social health outcomes such as (acceptance of self-control anxiety, role performance, and coping of his illness). This finding supported by *Snezana, Zikic, Stanojevic, and Petrovic-Nagorni, (2014)* who mentioned that "Several mechanisms explain these findings including links between negative emotions with bad habits such as smoking, nutritional habits, reduction of physical activity. Also

emotional stress has the direct negative effect on the progression of atherosclerosis and it reduces threshold for ventricular arrhythmias and possibly sudden cardiac death. Anxiety increases blood coagulability during and after the emotional stress, which is one of the mechanisms that may link this emotion and cardiac disease.

Correlation between psychological, social and perceived health outcomes, the finding of this study demonstrated that there was positive correlation between psychological, social and perceived health outcomes, that is when the patient is able to accept his/her body image, self-esteem and identity will be improved and can control his/her anxiety, all these previous indicators will affect patients' social interaction, acceptance and coping with illness, spiritual wellbeing and quality of life.

This result is consistent with *James, Nancy, Peter (2014)* who mentioned that, there was a positive correlation between psychological, social and perceived health outcomes. Certain behaviors and social characteristics may also contribute to the development and progression of coronary disease. These include low self-esteem, anxiety, social isolation, chronic life stress, un acceptance and unable to cope with illness. Psychological problem reduces the chances of successful modifications of other cardiac risk factors and participation in cardiac rehabilitation and is associated with higher healthcare utilization and costs and, not surprisingly, greatly reduced quality of life.

The relation between (biopsychosocial and perceived outcomes) and age the result revealed that, there was highly statistically significant relation between

physiological, psychological and social health outcomes with age.

This result goes in the same line with *Simms, Batin, Kurian, Durham and Gale(2012)* who reported in a study entitle "Acute coronary syndromes: an old age problem" that there was highly statistical significant relation between age and patients' physical and psychological outcomes. This study showed that older patients have poorer outcomes than younger counterparts following an ACS. This is related to a multitude of factors older age is a recognized risk factor not only for the development of CHD, but also highlighted in many ACS risk models to predict "short" and "long" term mortality.

Result of current study also is consistent with *Al-Saif et al. (2012)* who stated in a study entitle "Age and its relationship to acute coronary syndromes in the Saudi Project for Assessment of Coronary Events (SPACE) registry: The SPACE age study" that there was highly statistical significant relation between age and patients' physical and psychological outcomes. This study showed that older patients have a higher in-hospital mortality as they are treated less aggressively.

The relation between (biopsychosocial and perceived outcomes) and work status the result revealed that there was highly statistically significant relation between physiological, psychological and social health outcomes and patients' work status. This result goes in the same line with a study done by *Worcester et al.(2014)* entitle "Resumption of Work after Acute Coronary Syndrome or Coronary Artery Bypass Graft Surgery" who stated that, there was statistically significant relation between work status

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of the patients under study and their physiological and psychological outcomes. This study showed that ACS severity were predictors of subsequent return to work. Patients who resumed work after ACS were less likely to have experienced cardiac arrhythmia, heart failure and psychological problem in hospital.

This result also is consistent with **Bhattacharyya, Perkins-Porras, Whitehead and Steptoe, (2017)** who stated in a study entitle “Psychological and clinical predictors of return to work after acute coronary syndromes” that there was a highly statistical significant relation between work status and patients’ psychological and social outcomes.

The relation between (biopsychosocial and perceived outcomes) and present health history the result revealed that, there was statistically significant relation between physiological and psychological health outcomes and patients’ present health history, while there was insignificant relation with social and perceived health outcomes. This result is consistent with a study conducted by Snezana et al. (2014) entitle “Anxiety in patients with acute coronary syndromes” who stated that there was highly statistically significant relation between psychological health outcomes and present health history.

On the other hand this result is inconsistent with Matthiasa, In drakumar and Gunatilakeb (2017) who found in a study entitle “Physical activity levels of patients prior to acute coronary syndrome: experience at a tertiary care hospital in Sri Lanka ” that there was no difference in the physiological health outcomes of patients presenting with different types of ACS.

The relation between (biopsychosocial and perceived outcomes) and past health history the result revealed that there was statistically significant relation between physiological, psychological, and social health outcomes and patient past health history. While there was insignificant relation with perceived outcomes. This result is consistent with Carme, Roman, and Alejandro (2014) who reported in a study entitle “Epidemiology of coronary heart disease and acute coronary syndrome” that there was highly statistically significant relation between biopsychosocial health outcomes and past health history. This study suggested that lifetime risk of developing CHD with ≥ 2 major risk factors is 37.5% for men and 18.3% for women.

The present finding also is in agreement with a study done by Shrafeldin et al. (2017) entitle “Risk Factors Associated with Acute Coronary Syndrome in Northern Saudi Arabia”, who stated that there was highly statistically significant relation between biopsychosocial health outcomes and past health history.

Finally, ACS influences the individual's biopsychosocial wellbeing and imposes limitations on his/her everyday functioning and life in general. So when illustrating nursing outcomes for patients after ACS should focus on the holistic interaction between biological-psychological-social domains rather than addressing them as separate aspects of the individual or environment.

Conclusion

The present study revealed that more than half of the studied patients suffering from acute myocardial infarction with st-elevation and less than

two fifth of the patients had a past history of diabetes mellitus and hypertension. The present study revealed that all patients under study weren't compromised for peripheral tissue perfusion and medication response at physical health outcomes. The finding of the study showed that there was highly statistically positive correlation between physiological, psychological and social health outcomes. Furthermore, the present study revealed that there was asinificant relation of patients' biopsychosocial health outcomes with socio-demographic characteristics (age, educational level, work status and monthly income), present history and past history of the patients under study.

Recommendations

- ◆ Regular follow up for all patients with ACS to evaluate their health conditions and to detect complications early.
- ◆ Community health education regarding eliminating the risk factors of ACS.
- ◆ Establishment of centers for screening the clients at risk for ACS.
- ◆ More research into biological and psychosocial aspects of outcomes health is needed in order to increase the understanding of ACS and to develop more effective interventions.

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