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Assessment of physical, psychological and social needs for patients after coronary angioplasty

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***Abstract*---**The needs of cardiac patients have come to the forefront of contemporary clinical practice. Impressively, the provision of information has slowly been acknowledged as a key component of therapy that promotes healthcare decision-making.The aim of this study: The aim of this study was to assess physical, psychological, and social needs of patients after coronary angioplasty.Design: A descriptive exploratory design was utilized in this study.Subjects: A convenience subject of all available patients (N=100).Setting: The study was carried out at cardiac care unit at Tamia central hospital, El Fayoum Governorate.Data collection tools: Two tools were used for data collection (I) Sociodemographic assessment questionnaire: which included (a) Socio-demographic data (b) Past medical and surgical history data Questionnaire (c) Patients knowledge Questionnaire. (II) Assess patients needs after treatment with angioplasty questionnaire.The results: There was a strong positive correlation between total needs, physical needs, social needs and psychological needs, and between attitudes, psychological needs and autonomy.Conclusion: The majority of patients after coronary angioplasty had greater physical, psychological and social needs must be provided it to prevent hospital re admission and reduce mortality rate after coronary angioplasty.Recommendation: Assessment of physical, psychological and social needs for patients regarding different cardiac disorders after coronary angioplasty.

Keywords---coronary angioplasty, physical, psychological, social needs.

Introduction

Patients with coronary artery disease (CAD) frequently experience exertional chest pain or dyspnea during exertion. Plaque rupture, platelet aggregation, and acute thrombus development occur in acute myocardial infarction, resulting in an abrupt blockage of the coronary artery. Acute chest heaviness, diaphoresis, and nausea are common symptoms in these patients. PTCA is frequently required to limit myocardial damage (Chade., 2018).

Percutaneous trans-luminal coronary angioplasty (PTCA) is a minimally invasive technique that allows blood to flow freely to the myocardium by opening blocked or stenosed coronary arteries. Blockages in the arteries are caused by lipid-rich plaque, which reduces blood flow to the heart. Atherosclerosis is a condition in which lipid-rich plaque builds up in the arteries. Coronary artery disease is a condition that occurs when atherosclerosis damages the coronary arteries (Magliano, et al., 2019).

The access location for coronary angiography and angioplasty has long been the common femoral artery. Because of its larger size and the larger diagnostic and angioplasty guiding catheters that have recently been used, the femoral artery has been the preferable site of access. Aspects such as the profile of the balloons used also play a role. The introduction of newer anticoagulants and the use of improved coronary hardware have greatly expanded the range of procedures. One of the most feared consequences is vascular access site bleeding, especially when anticoagulants and platelet glycoprotein inhibitors are used. The femoral, brachial, and radial arteries are the three options for percutaneous coronary intervention (PCI) (Malik and Tivakaran, 2021).

After angioplasty, the coronary artery may narrow again. Restenosis is the medical term for this. The patient may have angina again if the artery narrows enough. Restenosis can be reduced with the use of stents. A stent would last roughly 5 individuals if given to 20 people. Restenosis can occur while the arterial wall heals after angioplasty. A new layer of tissue forms above the angioplasty site. This is a natural part of the healing process. In the majority of cases, the natural healing process slows and eventually ceases after a few weeks. Restenosis occurs when the new lining continues to grow. This can narrow the patient' arteries. The majority of occurrences of restenosis occur within the first three to six months after angioplasty. Restenosis is frequently treated with a second angioplasty procedure (Megaly, et al., 2019).

Social support is an important predictor of prognosis after coronary angioplasty in older populations, with numerous studies finding that patients with low perceived social support have worse outcomes after coronary angioplasty, including higher mortality, more cardiac events, and reduced health status. In fact, social support has been shown to be equivalent to many classic risk factors in predicting prognosis after coronary angioplasty, highlighting its utility as both a tool for risk

stratification and a potential target for interventions to improve post coronary angioplasty outcomes (Dorros, 2020).

Nursing practice is founded on a clinical and critical approach that aims to enhance and restore patients' physical, psychological, and social well-being while keeping the essence of their exercise in sight. This necessitates specific knowledge, abilities, and attitudes devoted to ethics and respect for people and their complete set of views and values. Hemodynamic nurses play a critical role because their work encompasses not only patient care at the bedside, but also the complete management process that is required for the service's operation (Espiñeira and Manfrini, 2019).

Aim of the study

The study aimed to assess physical, psychological and social needs for patients after coronary angioplasty through the following objectives:

- Assess physical, psychological, and social needs for patients after coronary angioplasty.

Research question

To achieve this aim, the following research questions were formulated:

1. What are the physical, psychological, and social needs for patients after coronary angioplasty?
2. Is there a relationship between the angioplasty procedure and patient's needs?

Subject and Methods

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

Research Design

An exploratory descriptive research design was adopted to fulfill the aim of the study and answer the research questions. It helps the investigator to describe and document aspects of a situation as it naturally occurs. As well, this design helps to establish a database for future research.

Setting

This study was conducted in the cardiac care unit at Tamia central hospital, El Fayoum governorate.

Subjects

A purposive sample of 100 adult patients admitted to the cardiac care unit at Tamia Central Hospital after coronary angioplasty.

Tools of Data Collection

There are two tools were utilized to collect the data during the study period:-

Tool (I): Sociodemographic assessment questionnaire

It was adapted from (Abd Elaty., 2020) in simple Arabic language based on the extensive review of relevant and recent literature to collect information related to personal data, and medical data to assess the needs of the patients after coronary angioplasty. These data collected and the questionnaire sheet was filled by the investigator through, an interview, by taking a history from patients and assessment of the patient. It will include the following parts.

Part (I) - Socio-demographic data: It was developed by the investigator; it's contained (age, gender, marital status, educational level, place of residence, occupational status, and, monthly income.... etc).
Part (II) - Past medical and surgical history data questionnaire: It was contained past medical history (chronic diseases, lab investigations, radiology reports and medical treatment of chronic diseases…etc), surgical history and family history.
Part (III) - Patients knowledge questionnaire: It was assessed levels of patients' knowledge as regards to angioplasty, which included (risk factors, clinical manifestations, treatment, and complications post angioplasty, and warning signs of recurrent attacks or restenosis).

Tool (II): Assess patients' needs after treatment with an angioplasty questionnaire

This tool adopted from (Cheong, et al., 2017) to assess the patients' needs after coronary angioplasty.Assess the patients' needs; it contains four sub-items, asking the patients' question "Do you need help? It consists of: physical, psychological, and, social needs. Each dimension contains sub-items as the following:

I. Physical needs (30 items): it was consisted of needs for mobility (6), Activities of Daily Living "ADL" (6), discomfort and heart states (14) and role/personal activities (4).
II. Psychological needs (24 items): it assessed the psychological sub-items as feelings of depression (2), feelings of anxiety (5), attitude toward disease (8), and autonomy (9).
III. Social needs (14 items): It was asked if the patients' needs help to maintain relations with others and the ability to talk about the disease with them and how they react to this condition and also their support for the patient.

Scoring system for tool II

The total of the needs questionnaire is (68) items, with a total score of (136).
- Score of domains, the answer to the question about all the items "Do you need help for this problem?" is divided into "Yes", "To some extent", and "No". It scored as: Yes = (2) if the patient has a need for this item, To some extent = (1) if patient

has a need to some extent and No = (0) as the patient hasn't a need at all. The total percentage of needs is calculated using the following table

Patients needs categories	Percentage
Poor	<60%
Mild	60-75%
Good	>75%

Validity

Testing the validity of the proposed tools by using face and content validity. Face validity is aimed at inspecting the items to determine whether the tools measure what they are supposed to measure. Content validity was conducted to determine whether the content of the tool covered the aim of the study. It was measured by a jury of 5 experts, three assistant professors and two of them lecturers of medical surgical nursing at the Faculty of Nursing, Helwan University. The expertise reviewed the tool for clarity of sentences, relevance, accuracy, comprehensiveness, simplicity, and applicability, minor modification was done. Finally, the final forms were developed.

Reliability

Numerical data were presented as mean, median, standard deviation (SD) and range values. Qualitative data were presented as frequencies (n) and percentages (%). The reliability of the questionnaire was assessed using Cronbach‘s alpha reliability coefficient. Cronbach‘s alpha reliability coefficient normally ranges between 0 and 1. Higher values of Cronbach‘s alpha (More than 0.7) denote acceptable reliability. Mann-Whitney U test with Bonferroni's adjustment was used for pair-wise comparisons when the Kruskal-Wallis test was significant. Spearman‘s correlation coefficient was used to determine correlations between different variables. The significance level was set at $P \leq 0.05$. Statistical analysis was performed with IBM® SPSS® Statistics Version 24 for Windows.

Ethical considerations

An official permission to conduct the proposed study was obtained from the scientific research ethics committee. Participation in the study was voluntary and subjects were given full information about the study and their role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, and confidentiality of the information where it couldn't be accessed by any other party without taking permission of the participants. Ethics, values, culture, and beliefs will be respected.

Results

Table 1: Frequency and percentage distribution of socio-demographic characteristics of the patients (n=100)

Items	No.	%
Age		
31- 40	24	24.0
41 – 50	50	50.0
> 50	26	26.0
Mean ± SD	49.13±10.24	
Gender		
Male	66	66.0
Female	34	34.0
Marital status		
Married	93	93.0
Not married	7	7.0
Educational level		
Bachelor degree	40	40.0
Secondary	33	33.0
Read and write	18	18.0
Illiterate	9	9.0
Place of residence		
Rural	44	44.0
Urban	56	56.0
Occupational status		
Governmental work	21	21.0
Free business	53	53.0
Retired	9	9.0
House wife	17	17.0
Monthly income		
Sufficient	43	43.0
Insufficient	57	57.0
Health insurance		
Yes	74	74.0
No	26	26.0
With whom patients live		
With family	99	99.0
Alone	1	1.0
Treatment expenses		
State-funded medical treatment	36	36.0
Funded with some expenses	41	41.0
No funded (on patients expenses)	23	23.0
Responsible for household expenses		
Yes	67	67.0
No	33	33.0

Table 2: Frequency and percentage distribution of medical history (n=100)

Items	No.	%
Suffering from chronic diseases		
Hypertension	36	35.3
Diabetes Mellitus	31	30.4
Ischemic Heart Disease	23	22.5
>	10	11.8
Suffering from diabetes?		
Yes	31	31.0
No	69	69.0
If yes? What kind of medication do you take?		
Insulin	11	11.0
Tablets	20	20.0
Do you done blood glucose level test periodically?		
Yes	21	21.0
No	79	79.0
Suffering from chronic viruses		
HCV	21	21.0
HBV	4	4.0
No	75	75.0
Recovery from virus's disease		
Yes	25	25.0
No	75	75.0
Previous interventional and therapeutic cardiac procedures		
Angioplasty	21	21.0
Pacemaker	1	1.0
Coronary artery bypass graft	17	17.0
Non	61	61.0
Complications occurring after interventional cardiac procedure		
Infection	10	10.0
Restenosis after 6 month	1	1.0
Bleeding	6	6.0
Arrhythmia	7	7.0
Inflammation	2	2.0
No	74	74.0
Efficiency of cardiac muscle according to last Echo		
< 50%	23	23.0
50-60%	44	44.0
>60-70% or more	33	33.0

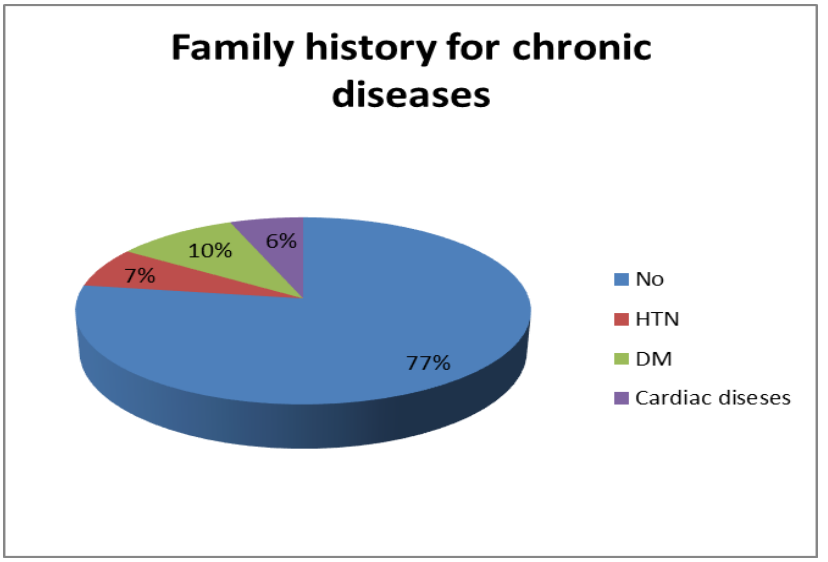

Figure (1): Family history for chronic diseases of studied patients.

Table 3: Total score of needs among studied sample. (n=100)

Items	Good	Average	Poor	Mean	SD
Patients' Needs					
Physical needs					
Movement	46	46	8	4.17	2.18
Daily activities	33	62	5	4.28	1.82
Symptoms	12	83	5	12.98	3.16
Personal tasks	15	69	16	4.00	1.58
Total Physical Needs	92	8	0	25.43	5.27
Psychological needs					
Depression	24	42	34	2.02	0.97
Anxiety	15	71	14	4.90	1.98
Total Psychological Needs	100	0	0	6.92	1.38
Social needs	100	0	0	11.01	3.17
Total Needs	6	93	1	43.36	7.09
Attitudes	34	63	3	6.24	5.23
Autonomy	19	77	4	7.90	2.37

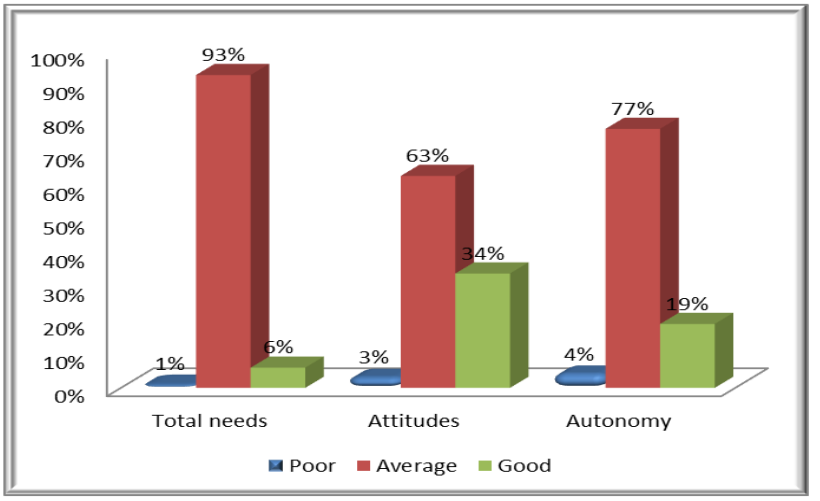

Figure (2): Total score of total needs, attitude, and autonomy of studied patients.

Table 4: Correlation between (physical, psychological and social) needs, attitudes, and autonomy among studied sample.

	Social needs		Psychological needs		Total Needs		Attitudes		Autonomy	
	r	p	r	p	r	p	r	p	r	p
Physical needs	0.074	0.463	0.159	0.114	0.821	<0.001**	0.037	0.715	0.139	0.167
Psychological needs	0.214	0.033*	-	-	0.494	<0.001**	0.416	<0.001**	0.153	0.129
Social needs	-	-	0.214	0.033*	0.562	<0.001**	0.201	0.045*	0.222	0.026*
Total Needs	0.562	<0.001**	0.494	<0.001**	-	-	0.234	0.019*	0.246	0.014*
Attitudes	0.201	0.045*	0.234	0.019*	0.234	0.019*	-	-	0.325	<0.001**

r Pearson Correlation
* Statistically significant at p≤0.05
** Highly statistical significant at p≤0.01

Discussion

Regarding socio-demographic characteristics and health history, the results of the current study showed that, half of the patients under study ranged from 41 to 50 years of age. As a result of an increase in risk factors in this age group, such as the emergence of many chronic diseases such as an increase in blood pressure or diabetes, and as a result of an increase in psychological stress after coronary angioplasty. This result was agreed with Azami, Jafferpour and Mozaffari. (2019), who found that half of the patients studied were between 40 and 50 years of age. On the contrary, this result differed with She, et al. (2017), who revealed that more than half of the patients studied there were over 60 years of age, and this

may be due to the higher life expectancy in the community and differences in culture and geography.

The current study revealed that, two third of studied patients were male, and a majority of them were married. Because in males, coronary artery disease (CAD) prevalence is consistently higher and increases exponentially starting at age 45, it is also an increasing risk factor for restenosis after coronary angioplasty it's most common in male patients than female patients. This result was agreed with Abd El-Gafour, Younis and Abed El-latief. (2021), who found that two third of the studied patients were male and married. Also, this study was supported by Polikandrioti, et al. (2020), who showed that two third of the studied patients were male and married.

On the other hand, this study contradicted with Albus, et al. (2019), who found that, females are more likely to have myocardial infarction after coronary angioplasty than men, more often with atypical symptoms, have more comorbidities, and receive treatment based on guidelines less often. Accordingly, the mortality rate after infarction is higher, especially in younger females. In addition to getting older, women have a higher prevalence of depression and post-traumatic stress disorder (PTSD), which in turn is associated with a higher risk of cardiovascular disease.

According to level of educational attainment is known to be associated with traditional cardiovascular risk factors after coronary angioplasty among asymptomatic individuals living in heterogeneous socioeconomic conditions. Regarding educational level and residence, the present study results indicated that, slightly more than half of the patients had a bachelor degree and were from urban. This finding is in agreement with Mckee, et al. (2019), who found that more than one third of studied patients had bachelor degree. Also, this result was supported by Shajrawi, et al. (2020), who showed that more than one third of the studied patients had bachelor degree and were from urban.

Concerning patients' monthly income level affects negatively or positively according to the their financial condition, which in turn affects the extent to which it meets the patient's needs for healthy nutrition or treatment, and all of this is also reflected on the patient's psychological condition. With regard to occupational status and monthly income, the current study showed that, more than half of the studied patients had free businesses and their monthly income was insufficient. This result was agreed with GÖKÇEN and KÖÇKAR. (2018), who found that more than one third of the studied patients had free work but their monthly income was sufficient.

In fact, social bound, including living with the family, are one of the most important factors of psychological support for patients, and the presence of health insurance for the patient provides him with a lot of material burdens, which in turn affects the psychological state of the patient. The constant study revealed that, nearly three quarter of the studied patients had health insurance and a majority of them lived with their families. This result was agreed with Mehrpoya, et al. (2018), who found that more than half of the studied patients had health insurance and were living with their families.

After coronary angioplasty, high blood pressure (HTN) and diabetes (DM) have a negative impact on patients' physical and psychological well-being. Regarding the past medical history of the patients, the present study illustrated that, more than one quarter of the studied patients suffered from HTN and DM. This finding was agreed with Saunders, Huta and Sweet. (2018), who reported that one third of the studied patients had HTN and one quarter of them had DM. Also, this study is inconsistent with Sadeghzadeh, et al. (2020), who conducted that most frequently reported high blood pressure more than half and diabetes in a about third of the studied patients.

Diabetes is recognized to increase morbidity and mortality after coronary angioplasty. The present study found that, less than one quarter of the studied patients' types of diabetes medication was insulin and more than two third of them didn't perform periodic blood glucose tests. This study agreed with Muthukrishnan, et al. (2021), who revealed that one third of the studied patients' type of diabetes medication was insulin and one quarter of them didn't perform periodic blood glucose test. Contrariwise, this result was disagreed with Siddardha, et al., (2020), who found that, more than half of the patients after coronary angioplasty had diabetes, and more than half of them do not have regular blood sugar tests.

If patients' physical, psychological, and social needs are not met after cardiac angioplasty, they will become ill again and need coronary angioplasty again. The current study revealed that, more than half of the studied patients didn't have previous interventional cardiac procedures, and two thirds of them didn't have complications occurring after interventional cardiac procedures. This study was supported by Devasia, et al. (2018), who revealed that one quarter of studied patients didn't have previous interventional cardiac procedures and two third of them didn't have complications occurring after interventional cardiac procedures. Contrariwise, this result was disagreed with Aronow. (2017), who showed that one third of the studied patients had previous interventional cardiac procedures.

The present study found that, more than one third of the studied patients' efficiency of heart muscle according to last Echo was 50-60%. This finding was agreed with Gargiulo, et al. (2019), who showed that one quarter of the studied patients' efficiency of heart muscle according to last Echo was 50-65%. Also, this result was agreed with Sapontis, et al, (2020), who reported that one third of the studied patients' efficiency of heart muscle according to last Echo was more than 50%. On the other hand, Chyrchel, et al. (2020), who revealed that, the Which revealed that, more than half of the participating patients had a cardiac ejection fraction of less than 45%.

This result was supported by Mckee, et al, (2019), who revealed that more than half of the studied patients had no family history of chronic diseases and one quarter of them had a family history of cardiac diseases. However, this study contradicted with Somuncu, et al., (2019), who confirmed that, less than a third of the participating patients had a family history of chronic diseases. Regarding total score of needs, the current study showed that, a majority of the studied patients' total needs level was average, less than two third of them their attitudes

level were average, and more than three quarter of the studied patients' autonomy level was average.

This finding was supported by Herdiman and Harsono. (2021), who discovered that more than half of the studied patients' total needs levels were average, and more than one third of their autonomy levels were average. Also, this result was agreed with Mohamed, Hafez and Mohamed. (2017), who revealed that more than two third of the studied patients' total needs levels were average, less than half of their attitudes levels were average, and more than one third of the studied patients' autonomy levels were average.

Concerning needs, attitude, and autonomy, the present study revealed that, there was a strong positive correlation between total needs, physical needs, social needs and psychological needs, as well as between attitudes, psychological needs and autonomy. There was a positive correlation between social needs, psychological needs, attitudes and autonomy, and between total needs, attitudes and autonomy.

This result was agreed with Sharma, et al. (2018), who reported that there was a positive correlation between total needs, physical needs, social needs and psychological needs. Also, this finding was agreed with Aazami, Jaafarpour and Mozafari, (2019), who revealed that there was a positive correlation between attitudes, psychological needs and autonomy.

Conclusion

Based on the results of the present study, the following can be concluded, Patients after coronary angioplasty had greater physical, psychological and social needs must be provided it to prevent hospital re admission by suffering of restenosis and reduce mortality rate. Additionally, they had a high level of concerns regarding the effect of disease and its treatment on their social and personal role. Therefore, those patients have shown many areas of physical, psychological and social needs deficits which reflect the reason of re admission and restenosis of coronary artery.The study revealed some areas of physical, psychological and social needs deficits especially about the after coronary angioplasty period at home.

Recommendations

Based on the findings of the present study, the following recommendations are suggested

Recommendations related to patients:

- Establishment of patients' educational centers in hospitals equipped by suitable related materials, Medias and audio-visual aids for teaching all patients after coronary angioplasty how to live with their medical condition.
- Cardiac rehabilitation centers must be established and encouraged.
- Community health education regarding eliminating the risk factors of acute coronary syndrome.

- Establishment of centers for screening the clients at risk for acute coronary syndrome.
- Establishment of smoke- free legislations.

Recommendations for furthers researches:

- Replication of the study on a larger probability sample selected from different geographical areas in Egypt is recommended to obtain more generalizable data.
- Further studies have to be carried out in order to assess the physical, psychological and social needs for patients regarding different cardiac disorders after coronary angioplasty.

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