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Original Article

Exploring Non-Conventional Psychosocial Factors in Patients with Coronary Artery Disease: A Cross-Sectional Study at Mardan Medical Complex

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ABSTRACT

Background: Coronary artery disease (CAD), marked by the constriction or obstruction of the coronary arteries responsible for heart supply, remains the foremost cause of death globally. This condition is universally acknowledged as the primary contributor to mortality rates. Traditional risk factors for CAD are extensively documented, such as hypertension. Recent research emphasizes the importance of non-conventional psychosocial factors, including depression, anxiety, marital status, job strain, effort-reward imbalance, work stress, and social support.

Objective: The objective of this study is to examine non-conventional psychosocial factors in order to gain a deeper insight into their influence on coronary artery disease.

Methods: This descriptive cross-sectional study utilized convenience sampling to collect data via questionnaires from volunteer patients who visited the cardiology department at Mardan Medical Complex. The sample size comprised 323 CAD patients, determined with a 95% confidence level using Open-Epi, based on an anticipated frequency of 30% and a critical limit of 5%. Data were analyzed using SPSS 22. Numerical variables were assessed with mean and standard deviation, while categorical variables were analyzed using frequency and percentage computations.

Results: The study encompassed 323 patients diagnosed with CAD, with a response rate of 100%. Among these individuals, 171 (52.9%) were male, while 152 (47.1%) were female. Work-related stress was observed in 33 patients (10.2%). Marital stress affected 13 patients (4%), while financial stress was present in 97 patients (30%). The mean age of patients was 60.5 ± 10.3 years. Financial stress showed a significant association with CAD, while marital stress did not.

Conclusion: In this study, male CAD patients experienced a higher prevalence of work-related stress compared to females. A substantial portion of the patient population was between the ages of 50 and 70 years, a demographic particularly prone to CAD and its complications. Among the non-conventional psychosocial factors investigated—work stress, marital stress, and financial stress—financial stress exhibited a significant association with CAD development, while marital stress showed no significant contribution to the disease.

Keywords: Coronary artery disease, Finance, Job strain, Marital stress, Psychosocial factors

INTRODUCTION

Cardiovascular diseases (CVDs) encompass a range of conditions that impact the heart and blood vessels, with Coronary Artery Disease (CAD) standing as the predominant cause of mortality both globally and locally. In 2019, CVDs were responsible for an estimated 17.9 million deaths worldwide, underscoring the critical importance of addressing CAD, which is the most prevalent condition within this spectrum (1-2). Atherosclerosis, characterized by the accumulation of plaque within arterial walls, is the primary etiological factor behind CAD. This condition can be attributed to various risk factors, including elevated blood pressure, high cholesterol levels, smoking, diabetes, and a familial predisposition (3). According to the American Heart Association (AHA), the overall death rate associated with CAD in 2010 was 235.5 deaths per 100,000 population, highlighting the significant burden of this

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disease. Moreover, it is reported that an American experiences a coronary event every 31 seconds, with a death attributable to CAD occurring every 1 minute and 23 seconds (4).

While traditional risk factors for CAD, such as hypertension, high cholesterol, and smoking, are well-documented, there is an increasing recognition of the impact of psychosocial factors on cardiovascular health. Psychosocial factors, including depression, anxiety, socioeconomic status, social support, job strain, work stress, and marital status, play a crucial role in the course of illness in cardiac patients (3, 5). Effort–Reward Imbalance (ERI) is a theoretical model suggesting that the risk of CAD increases when there is a mismatch between the amount of effort expended at work and the rewards received in return. This imbalance can lead to stress, anxiety, and other negative emotions, contributing to the development of CAD. For instance, a study revealed that individuals subjected to high job strain or a high effort-reward imbalance faced an elevated risk of cardiovascular disease compared to those experiencing low job strain or low effort-reward imbalance, with high job strain associated with a 2.2-fold higher risk and high effort-reward imbalance with a 2.4-fold increased risk of cardiovascular mortality (3).

Given the significant impact of psychosocial factors on cardiovascular health, it is essential to explore these non-conventional factors in patients with CAD. This study aims to examine the influence of psychosocial factors such as work stress, marital stress, and financial stress on the development and progression of CAD. By gaining a deeper understanding of these factors, we can better address the psychosocial aspects of CAD management and improve patient outcomes. Investigation of non-conventional psychosocial factors is crucial for understanding the comprehensive impact of these elements on CAD. By examining factors such as work stress, marital stress, and financial stress, this study aims to provide valuable insights into the psychosocial dimensions of CAD, ultimately contributing to more effective management and intervention strategies for patients with this condition.

MATERIAL AND METHOS

This cross-sectional study was conducted within the Department of Cardiology Ward at Mardan Medical Complex, KP, Pakistan, from June 2023 to November 2023. Ethical approval was obtained from the Bacha Khan Medical College Ethical Review Committee (No. 362/BKMC, dated 15-08-2023), ensuring that the study adhered to the principles outlined in the Declaration of Helsinki.

The sample size was determined using OpenEpi software, calculating a total of 323 CAD patients with a 95% confidence level and a critical limit of 5% in the targeted population (6). A convenience sampling technique was employed to recruit volunteer patients who visited the cardiology department. Inclusion criteria were patients aged over 20 years with a diagnosis of CAD, while those under 20 years, suffering from serious life-limiting diseases, or with mental disorders that could interfere with the data collection process were excluded.

Data collection involved a standardized and validated questionnaire designed to capture detailed information on non-conventional psychosocial factors. This included demographic variables such as age, gender, education, employment, and income, as well as specific queries about job type (government or private), income brackets, and marital status (married or unmarried). The Hospital Anxiety and Depression Scale (HADS), developed by Zigmond and Snaith, was employed to evaluate psychological stress levels among CAD patients. The HADS is a well-established self-assessment instrument used in numerous studies to gauge psychological distress in both CAD patients and the general population. Each variable on the scale was rated on a four-point scale, ranging from 0 (no presence) to 4 (intense presence).

Verbal consent was obtained from all study participants, ensuring their confidentiality and privacy throughout the research process. Participants who agreed to partake in the study were subsequently interviewed about their experiences related to non-conventional psychosocial factors. The data collection process was rigorously supervised to maintain consistency and reliability (3, 7).

Statistical analysis was performed using SPSS version 25. Descriptive statistics were utilized to compute the mean and standard deviation for numerical variables, while frequency and percentage calculations were used for categorical variables. The analysis aimed to identify the prevalence and impact of various psychosocial stressors, such as work-related stress, marital stress, and financial stress, on the patient population.

The study aimed to provide a comprehensive understanding of the role of non-conventional psychosocial factors in the development and progression of CAD. By employing robust data collection and analysis methods, the research sought to contribute valuable insights that could inform more effective management and intervention strategies for CAD patients, emphasizing the importance of addressing psychosocial elements alongside traditional medical treatments.

RESULTS

The study included a total of 323 patients diagnosed with coronary artery disease (CAD), achieving a response rate of 100%. The demographic characteristics and risk factors for CAD among the study participants are summarized in the tables below.

Table 1: Demographic Information of Patients

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Characteristics	Frequency (n)	Percent (%)
Gender		
Male	171	52.9
Female	152	47.1
Total	323	100.0
Education Status		
Illiterate	218	67.5
Primary	29	9.0
Secondary	35	10.8
College (HSSC)	13	4.0
Graduate	28	8.7
Total	323	100.0
Marital Status		
Married	226	70.0
Unmarried	9	2.8
Widowed	88	27.2
Total	323	100.0
Income Status		
Low (<50,000 PKR)	180	55.7
Middle (50,000-100,000 PKR)	121	37.5
High (>100,000 PKR)	22	6.8
Total	323	100.0
BMI		
<18.5	9	2.8
18.5-24.9	134	41.5
25-29.9	116	35.9
>30	64	19.8
Total	323	100.0
Job Status		
Employed	53	16.4
Unemployed	270	83.6
Total	323	100.0
Residence		
Urban	101	31.3
Rural	222	68.7
Total	323	100.0

The mean age of the patients was 58.78 years (±13.75), with a predominance of males (52.9%). The majority were illiterate (67.5%), and most were married (70%). A significant portion of the patients belonged to low-income families (55.7%). The body mass index (BMI) distribution showed that 41.5% of patients had a normal BMI, while 35.9% were overweight, and 19.8% were obese. Employment status revealed that only 16.4% were employed, and the majority resided in rural areas (68.7%).

Table 2: Risk Factors for CAD

Risk Factors	Frequency (n)	Percent (%)
Family History		
Yes	122	37.8
No	201	62.2
Total	323	100.0
Smoking History		
Yes	47	14.6
No	276	85.4

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Risk Factors	Frequency (n)	Percent (%)
Total	323	100.0
Hypertension History		
Yes	225	69.7
No	98	30.3
Total	323	100.0
Diabetes Mellitus History		
Yes	146	45.2
No	177	54.8
Total	323	100.0

The analysis of risk factors indicated that 69.7% of patients had hypertension, 45.2% had diabetes mellitus, 14.6% were smokers, and 37.8% had a positive family history of CAD.

Table 3: Prevalence of Stress-Related Factors

Stress Factors	Frequency (n)	Percent (%)
Work-Related Stress		
Rare	105	32.5
Sometimes	137	42.4
Often	43	13.3
Very Often	38	11.8
Total	323	100.0
Common Stressors in Life		
Work-Related Stress	33	10.2
Marriage-Related Stress	13	4.0
Finance-Related Stress	97	30.0
Other Stressors	180	55.7
Total	323	100.0
Socio-Economic Support		
Supported	75	23.2
Not Supported	248	76.8
Total	323	100.0
Job Satisfaction		
Satisfied	175	54.2
Not Satisfied	148	45.8
Total	323	100.0

The study found that 32.5% of patients reported rare work-related stress, while 42.4% experienced it sometimes. Only 10.2% reported work-related stress as a significant issue. Marriage-related stress was noted in 4% of patients, and financial stress was prevalent in 30%. Socio-economic support during tough times was lacking for 76.8% of the patients. Job satisfaction was reported by 54.2% of patients, while 45.8% were not satisfied with their jobs.

These findings highlight the significant association between financial stress and the development of CAD, while work-related and marital stress were less impactful. The demographic and psychosocial profiles underscore the need for comprehensive management strategies that address both medical and psychosocial aspects of CAD in this population.

DISCUSSION

The current study aimed to explore the influence of non-conventional psychosocial factors on patients with coronary artery disease (CAD) at Mardan Medical Complex. The findings revealed significant associations between certain psychosocial stressors and the prevalence of CAD, particularly highlighting the role of financial stress. The study population predominantly consisted of males, aligning with existing literature that suggests a higher prevalence of CAD among men (4). The mean age of participants was 58.78 years, which is consistent with the typical age range for CAD onset, as previously documented (3).

One of the notable findings was the impact of financial stress, which affected 30% of the participants. This is in line with previous studies that have identified financial stress as a significant risk factor for CAD. For instance, Moran et al. (2018) found that financial

stress was associated with a higher risk of incident CAD among African Americans (8). The present study corroborates these findings, emphasizing the need for targeted interventions to mitigate financial stress among CAD patients (6).

In contrast, work-related stress was reported by 10.2% of the participants, which is lower than the rates observed in other studies. Chandola et al. (2008) reported a stronger association between chronic work stress and CAD, particularly among younger individuals under 50 years of age (7). The lower prevalence of work-related stress in this study could be attributed to the high unemployment rate among the participants (83.6%), which might have influenced the reported levels of work stress. Furthermore, the majority of the study population resided in rural areas, where employment patterns and stressors might differ from urban settings.

Marital stress was the least prevalent among the psychosocial factors examined, affecting only 4% of the participants. This finding aligns with previous research by Eaker et al. (2007), which suggested that traditional markers of marital strain do not significantly correlate with the development of CAD (5). The low impact of marital stress observed in this study suggests that other psychosocial stressors, such as financial strain, may play a more prominent role in influencing CAD risk (9-13).

The study's strengths include its comprehensive approach to examining multiple psychosocial factors and its adherence to rigorous ethical standards, including obtaining verbal consent and ensuring participant confidentiality. However, the study also had limitations (14-18). The use of a convenience sampling technique might limit the generalizability of the findings. Additionally, the cross-sectional design precludes establishing causality between psychosocial factors and CAD. The reliance on self-reported data could also introduce bias, as participants might underreport or overreport their stress levels due to social desirability or recall bias (19).

Despite these limitations, the study provides valuable insights into the role of psychosocial factors in CAD. The findings highlight the importance of addressing financial stress as part of comprehensive CAD management strategies. Future research should consider longitudinal designs to establish causal relationships and explore the impact of psychosocial interventions on CAD outcomes. Additionally, incorporating objective measures of stress and expanding the study to include diverse populations could enhance the robustness and applicability of the findings (20).

CONCLUSION

In conclusion, this study underscores the significant association between financial stress and CAD, while work-related and marital stress appeared to be less impactful. These results emphasize the need for holistic approaches to CAD management that address both medical and psychosocial factors. By integrating strategies to alleviate financial stress, healthcare providers can improve the overall well-being and health outcomes of CAD patients. The study's contributions to understanding psychosocial influences on CAD pave the way for future research and intervention development in this critical area of cardiovascular health.

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