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Orignal Article

Identification of Patients having Pre-ACS Pain Impending Cardiac Events and Their Risk Management

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ABSTRACT

These include angina (UA), a myocardial infarction (AMI), and sudden cardiac death (SCD) (ACS). Southeast Asian countries, particularly Pakistan, have seen an increase in the prevalence of the disease. **Objective:** We sought to find out whether there was a link between pre-ACS pain and an elevated risk of future cardiac events. **Methods:** The KRL Hospital in Islamabad funded this Cross-Sectional Study, which ran from November 2021 to February 2022. Those diagnosed with ACS for the first time were included in our study. In SPSS version 23, chi-square tests were employed for inferential statistics. **Results:** 72.7 percent of the attendees were men, while 27.3 percent were women There were 57,12 people in the typical household. 30% of patients had NSTMI, 20% had anterior wall MI, and 14.77% had Acute Coronary Syndromes. At the same time, 49 percent of individuals were either overweight or obese. BMI, obesity, sedentary behavior, fast food intake, smoking, and exercise all show significant p values when it comes to predicting cardiac events in patients. **Conclusion:** Estimates suggest that up to 90% of those who have a recognized cause of acute chest syndrome are affected by it. A history of ischemic heart disease must be ruled out via a series of medical exams. Identifying at-risk students requires the use of grades.

INTRODUCTION

A heart attack, heart failure, or sudden cardiac death are all symptoms of the acute coronary syndrome (ACS) (ACS). Diagnosing chest discomfort in the pre-hospital scenario as soon as feasible is critical. Stable angina, non-ST elevation myocardial infarction, and ST-elevation myocardial infarction are all acute coronary syndromes [2]. One or more of the four most frequent risk factors was found in 91 percent of Pakistanis in a study. [3] It's vital to keep in mind that these risk variables are affected by one's age and gender [4]. Among those who have significant chest pain, one in ten will develop acute coronary syndrome (ACS). Hospitalizations may be avoided if the risk of ACS were appropriately identified by clinical tests. High-risk patients might benefit from more expedited treatment. All of the first tests performed on individuals who were brought to hospital emergency rooms with symptoms suggestive of ACS were negative. The HEART and TIMI risk scores are the initial cardiac troponins that provide diagnostic information. According to a new study conducted by German specialists, the median time interval between the onset of symptoms and the first visit to the doctor is still far too long [5]. Current ACS risk classification, according to another study, may prolong the therapy-risk paradox. A doctor's total patient risk assessment may miss out on the most important risk factors. When a validated risk score is used consistently, it has the potential to enhance risk classification and allow for more effective treatment of high-risk patients [6]. Pre-ACS chest soreness was something we were looking for in patients admitted to the ICU before any cardiac event. It's possible to use this information in the future to identify those who are at risk for cardiac incidents.

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METHODS

Cross-Sectional research was conducted at Kahuta Research Laboratories Hospital Islamabad. The study duration was from Nov 2021 to Feb 2022. Randomly selected 150 patients with a 95 percent confidence interval and a 5% margin of error was done via non-random sequential sampling. Our study included all individuals who were diagnosed with ACS for the first time. Patients having a prior diagnosis of Acute Coronary Syndrome or diabetes, as well as those with abnormal blood sugar levels (fasting sugars/HBA1C), were excluded from our study. The ethical review committee of the KRL Hospital Islamabad approved the collection of data. A pre-designed questionnaire containing all of the participant's personal and family data was used with the participant's consent. Statistical Package for The Social Sciences was used for statistical analysis of the data. Its significance was determined by using a P-value of less than 0.05. As well as quantitative measures like the mean, we calculated qualitative measures like the percentages and frequencies that comprised them. Inferential statistics were studied with the use of the Chi-square test.

RESULTS

In our study, 72.7 percent of the participants were males, and 27.3 percent were women. In this study, individuals ranged in age from 25 to 57 years old on average. Table I shows that pre-ACS pain patients' age and gender had a significant correlation(p value 0.00)with their diagnosis.

	Frequency	Percent
	Gender	
Male	109	72.7
Female	41	27.3
	Age	
20-40	6	4.0
41-60	91	60.7
61-80	53	35.3

Table I: Age & Gender Demographics

Diagnosis	Frequency	Percent
Acute Coronary Syndrome	22	22
Angina	8	8
Anterior Wall Myocardial Infarction	30	30
Ischemic Heart Disease	2	2
Inferior Wall Myocardial Infarction	26	26
Lateral Myocardial Infarction	2	2
Non-ST-Segment Myocardial Infarction	45	45
Post MI	15	15

Table 2: Diagnosis of Patients with Pre-ACS Pain

One-third of patients had an NSTEMI, whereas another two-thirds had an anterior wall MI and one-third had an inferior wall MI. Only 14.7 percent of patients were diagnosed with Acute Coronary Syndrome (Table 2). Twenty eight percent of the population had a normal Basal Metabolic Index, 49.3 percent were slightly overweight, and 22.7 percent were obese, according to the data. Moderate sedentary lifestyles were reported by 38.7 percent of the population, while mild sedentary lifestyles were recorded by 33.3 percent of the population and severe sedentary lifestyles were reported by 28 percent.46.7 percent ate fast food more than half of the time, while 38 percent did so on a regular basis. 41.3 percent of patients said they exercised three to four times a week, whereas 29.3 percent said they exercised no more than once a week or less frequently. In our study, 55.3% of patients were nonsmokers, compared to just 44.7% of smokers.

	Frequency	Percent
	BMI	
18.5 to 24.9	42	28.0
25 to 29.9	74	49.3
Above 30	34	22.7
	Sedentary Lifestyle	
Mild	50	33.3
Moderate	58	38.7
Severe	42	28.0
	Fast Food	
Not at all	16	10.7
Several days	57	38.0
More than half the days	70	46.7
Nearly every day	7	4.7
	Exercise	
Less than 1 time per week	44	29.3
1-2 times per week	34	22.7
3-4 times per week	62	41.3
5 or more times per week	10	6.7
	Smoking	
Yes	67	44.7
No	83	55.3

Table 3: Contributing Factors towards Pre-ACS Pain

Table 3 shows that BMI, obesity, inactivity, fast food consumption, smoking, and exercise all have significant p values of 0.00 or less when it comes to predicting cardiac events in patients.

DISCUSSION

The greatest cause of mortality in the ER is an acute coronary syndrome (ACS). This can lead to clinicians being deceived by the fact that a third of people with ACS don't show any symptoms of heart palpitations [7]. Although many doctors and researchers have made considerable strides in the field over the past few decades, it is still difficult to define and treat people with chest discomfort. Doctors must maintain scepticism regarding an ACS diagnosis, particularly in specific patient demographics, such as the elderly [8]. It was found that only 2.5 percent of those who went to the emergency room with chest pain had 30-day cardiovascular event risks that were less than 0.5

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percent. While the underlying reason for these individuals' chest pain may not be identified, simple clinical procedures can nonetheless produce considerable estimations of cardiac risk [9]. ACS is more strongly linked to men than women in Sri Lanka's Teaching Hospital Peradeniya, which is consistent with our findings [10]. ACS affects males more commonly than women, according to research at French university hospitals. An ACS diagnosis was associated with a person's age and level of smoking [11]. It is possible to predict mortality in patients with unstable angina and non-ST-elevation MI using the TIMI Risk Score for UA/NSTEMI. Pre-hospital management of chest pain is most difficult for individuals with severe cardiovascular disease, according to a study by the Acute Cardiovascular Care Association (ACCA). If biomarkers and imaging modalities aren't regularly employed in the pre-hospital context, it may be difficult to recognize non-ST elevation ACS [13]. According to the findings of the research, patients with chest pain who visited Skne University Hospital at different times of the day were more likely to be diagnosed with ACS. A significant factor is that ACS symptoms may arise at any time of the day or night. We need more research with individuals of diverse ages, income levels, and healthcare settings to be sure. A patient's stay in the emergency department (ED) should be taken into consideration when deciding whether or not they are at risk for coronary artery disease (ACS). Research at Agha Khan University in Karachi found that those with non-cardiac chest pain had slower pulses, more atypical chest pain, and a more normal ECG at baseline than people with cardiac chest pain. Angina pectoris was the most prevalent cause of death from coronary syndrome (ACS) (NCCP and NSTEMI). Chest discomfort should be tested for in NCCP patients to discover the cause and alleviate their anxiety about being diagnosed [15]. Risk factors have an important role in the development of cardiovascular disease, according to research from Karachi's Tertiary Care Hospital in Pakistan. It is essential that physicians and nutritionists work collaboratively in order to avoid coronary heart disease (CAD). When electrolyte levels are out of whack, preventative steps must be taken [16]. University of Amsterdam researchers found that there is currently no clinical decision aid that can definitively rule out ACS in the majority of cases. The Marburg Heart Score has been shown to be more accurate in identifying individuals with intermittent chest pain than clinical judgment alone in the extensive study [17]. When it comes to diagnosing chest discomfort, current risk assessments do not outperform unaided clinical judgment, according to a retrospective cohort study. The INTERCHEST score can only be used to slightly improve risk classification. The Marburg Heart Score was shown in a German study to be helpful in the early detection of coronary heart disease by primary care physicians (CHD)By using hs-cTn tests in clinical algorithms, the Acute Cardiovascular Care Association claims that patients who present to the ED with chest pain may be better diagnosed and treated. ECG monitoring, bedside echocardiography, and further CCTA or ischemia tests must be performed [20].

CONCLUSION

Patients with chest discomfort may benefit from an ECG-based clinical decision support tool combined with the judgment of qualified emergency personnel to improve clinical outcomes and save unnecessary costs. Pre-hospital care needs defined action plans with time management and secure transfer to centers appropriate to the patient's individual requirements. Acute chest syndrome (ACS) pain appears out of nowhere in the majority of individuals. To rule out underlying ischemic heart disease, regular medical examinations are necessary. A grading methodology is needed to identify the communities in danger.

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