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THE PREVALENCE OF CARDIOVASCULAR DISEASE AND TO ASSESS THE QUALITY OF LIFE IN EARLY ADULTS

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ABSTRACT

Introduction: Aging is an inevitable part of life, but it is also the most significant risk factor for cardiovascular disease.

Purpose: A cross-sectional study is conducted in tertiary care hospitals to determine the prevalence and quality of life for young people with cardiovascular disease.

Method: 407 participants in a six-month trial were recruited in 2022. Demographic information, clinical features, the Life's Simple 7 scale, and the WHOQOL-Bref questionnaire were all collected. Three health variables and four health behavioural components are included in the Life's Simple 7 scale. The four dimensions of a WHOQOL-Bref questionnaire included environment, social relationships, psychological health, and physical health.

Results: A little over half (64.9%) of the 407 patients, were men. The majority of young adults (54.1%) had average cardiovascular health, which was followed by optimal cardiovascular health (42.5%). There were notable differences in the patients' overall cardiovascular health depending on their disease type. Patients who are women generally have a lower physical quality of life than patients who are men. Gender has an impact on pain, as women experienced issues with it more frequently than males.

Conclusion: The type of disease and cardiovascular health have a significant association. Cardiovascular disease patients have deteriorated cardiovascular health.

Keywords: Young adults, Cardiovascular disease, Quality of life, Life's simple 7 scale, WHOQOL-Bref questionnaire

INTRODUCTION

Cardiovascular disease (CVD) is the world's leading cause of mortality and disability and a significant public health burden **[1]**. One of the most important risk factors for cardiovascular disease is age. Many physiological functions gradually deteriorate as we age, increasing our risk of problems and diseases **[2]**. Young adulthood is considered to be between the ages of 18 and 39.

The burden of hypertension in India is expected to rise considerably in the coming years due to rapid environmental and "lifestyle" changes that emanate from hazardous working conditions and growing social pressures for survival **[4]**.

The 2013 Global Burden of Disease Study estimated that almost 30% of all deaths worldwide were caused by CVD. Estimates suggest that by 2030, 44% of the population will have some type of CVD. Patients with CVD experience numerous physical symptoms, including fatigue, dyspnea, and chest pain, which affect their physical, emotional, and social well-being and cause significant impairment in their quality of life (QoL) **[5, 6]**.

Over the past 20 years, young adults (aged 18 to 45) have developed a rising number of harmful risk factors, such as obesity, poor nutrition, and physical inactivity. Growing data indicates that trends in incident cardiovascular illness (particularly heart failure) have been rising or remaining stable over the past few decades in young individuals, in contrast to older adults **[7]**.

The American Heart Association defines better cardiovascular health as a combination of health factors (weight, blood pressure, cholesterol, and fasting blood glucose) and modifiable health behaviour (exercise, nutrition, and tobacco use) **[8]**.

A combination of health factors (weight, blood pressure, cholesterol, and fasting blood glucose) and changeable health behaviors is what the American Heart Association refers to as better cardiovascular health (exercise, nutrition, and tobacco use).

Cardiovascular disease (CVD) and diabetes are responsible for nearly 17 million deaths worldwide each year **[9]**. According to the Global Burden of Disease, cardiovascular diseases (CVDs) account for over a quarter (24.8%) of all fatalities in India. Even a review of MCCD data, which documents the medical certification of the cause of death, shows a rise in the percentage of deaths attributable to CVD. It increased from 20.4% in 1990 to 27.1% in 2004. Non-communicable diseases are becoming more common among the elderly **[10]**. According to the 2014 US Surgeon General's Report on Smoking and Health, it

contributes to about 1 of every 4 deaths from CVD **[11, 12]**.

Cardiovascular diseases (CVDs) are responsible for over a quarter (24.8%) of all fatalities in India, according to the Global Burden of Disease. The percentage of deaths related to CVD has increased, even when looking at MCCD data, which records the medical certification of the cause of death. Non-communicable diseases are becoming more prevalent among the elderly, rising from 20.4% in 1990 to 27.1% in 2004.

Engaging young adults is necessary to develop the evidence base for CVD prevention in this population since they are frequently cut off from the healthcare system and may be uninspired or unable to put their long-term health first **[13]**.

This cross-sectional study was conducted to assess the prevalence and quality of life of cardiovascular diseases in the young age group in tertiary care hospitals.

METHODOLOGY

The cross-sectional observational study is carried out over a 6-month period using 407 samples from Erode Tertiary Care Hospitals. The American Heart Association and American Stroke Association (AHA/ASA) established the Life's Simple 7 CVH assessment in 2010. (LS7). The WHOQOL-Bref Questionnaire and Life's Simple 7 Components Scale are both used in this study. Life's simple 7-component scale includes 3 health factors and 4 health behavioral factors. The health factors include total cholesterol, blood sugar, and blood pressure. The health behaviour factors include diet, physical activity, smoking, and BMI. The scores were calculated (ranging from 0 to 2 per component) and classified as ideal (2), intermediate (1), and poor (0). An overall LS7 score was calculated (ranging from 0 to 14) and classified as inadequate (0–4), average (5–9), and optimal (10–14) cardiovascular health (CVH). The WHOQOL-Bref questionnaire evaluates the general quality of life and considers the past two weeks. It is a WHOQOL-Bref with 26 items and good psychometric properties that assesses four QoL domains: physical health, psychological health, social relationships, and environment. Not at all (1), A little (2), Moderate (3), Very much (4), and Extreme (5) were the scores from 1 to 5. The measure was calculated by summing the point values for the questions corresponding to each domain and then transforming the scores to a 0-100 point interval, or alternatively, a 4–20 point interval. Higher scores in each of the domains correspond to greater perceived quality of life. The study did not include individuals who were unconscious, pregnant, or suffering from mental illness. Instead, it included patients with newly and previously diagnosed CVDs. Data analysis is carried out using Graph pad Prism V.9.4.1. Chi-square analysis was used to compare the

prevalence of cardiovascular disease in men and women. The Kruskal-Wallis test is used to compare the overall score on the LS'7 scale and the categories of components between males and females. To compare the differences between men and women in each QOL domain, the Mann-Whitney test was used.

RESULTS AND DISCUSSION

Table 1, shows the demographic information of the patients.

In **Table 2**, A Chi square test was used to compare the different cardiovascular disease between male and female and found to be statistically significant.

In **Table 3**, A Kruskal Wallis test was used to compare the categories of components in Life's Simple 7 scale.

In **Table 4**, A Kruskal-Wallis test was used to compare the overall health of the subjects by disease type and a significant difference was observed between the subjects with different cardiovascular disease.

In **Table 5**, The Mann Whitney test was used to compare the difference between male and female in each domain.

Table 1: Demographic information of the patients

S. No.	Demographic Information	Number of patients (n=407) (%)	Male (264)	Female (143)	Mean	SD
1.	Age(yrs)					
	18-28	92 (22.6)	60	32	46	19.8
	29-39	315(77.4)	204	111	157.5	65.76
2.	Educational level					
	Illiterate	51(12.5)	35	16	25.50	13.44
	Elementary school	47(11.5)	37	10	23.50	19.09
	Middle school	138(33.9)	89	49	69.00	28.28
	College or more	171(42.1)	103	68	85.50	24.75
3.	Working time distribution					
	Sedentary	29(7.1)	13	16	14.50	2.121
	Moderate	250(61.4)	143	107	125.0	25.46
	Heavy	128(31.5)	108	20	64.00	62.23
4.	Mental stress					
	Not at all	22(5.4)	14	8	11.00	4.243
	Mild	102(25.1)	61	41	51.00	14.14
	Moderate	231(56.7)	145	86	115.5	41.72
	High	52(12.8)	44	8	26.00	25.46
5.	Sleeping time wise distribution					
	<6hrs	49(12.1)	30	19	24.50	7.778
	6-8hrs	342(84)	225	117	171.0	76.37
	>8hrs	16(3.9)	9	7	8.000	1.414
6.	Alcohol intake					
	Alcohol intake	172(42.2)	172	-		
	Very heavy		24(14)			
	Heavy		53(30.8)			
	Moderate		59(34.3)			
	High		36(20.9)			
	Non-alcoholic	235(57.8)	92	143	117.5	36.06

Table 2: Type of Cardiovascular Disease

S. No.	Category	Number of Patients (n=407)	Male (264)	Female (143)	Mean	SD	P value
1.	CAD	289(71.1)	198	91	144.5	75.66	
2.	CCF	45(11.0)	32	13	22.50	13.44	
3.	RHD	68(16.7)	31	37	34.00	4.243	0.0082
4.	cardiomegally	3(0.7)	2	1	1.500	0.7071	
5.	cardiomyopathy	2(0.5)	1	1	1.0	0	

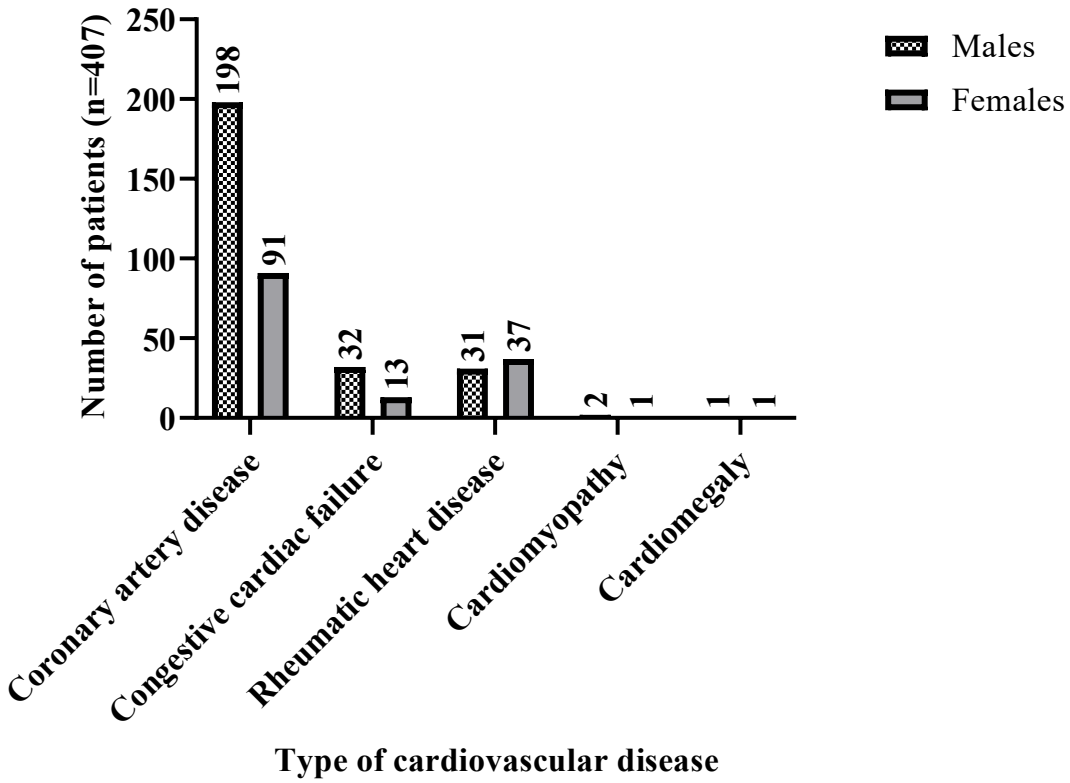

Figure 1

Table 4: Overall ls-7 components score

S. No.	Type of Disease	Inadequate		Average		Optimal		P Value
		M	F	M	F	M	F	
1.	CAD	12	1	114	38	54	44	
2.	CCF	0	0	15	13	35	9	
3.	RHD	1	0	19	19	12	19	0.02333
4.	cardiomyopathy	0	0	1	0	0	0	
5.	cardiomegally	0	0	1	0	0	0	

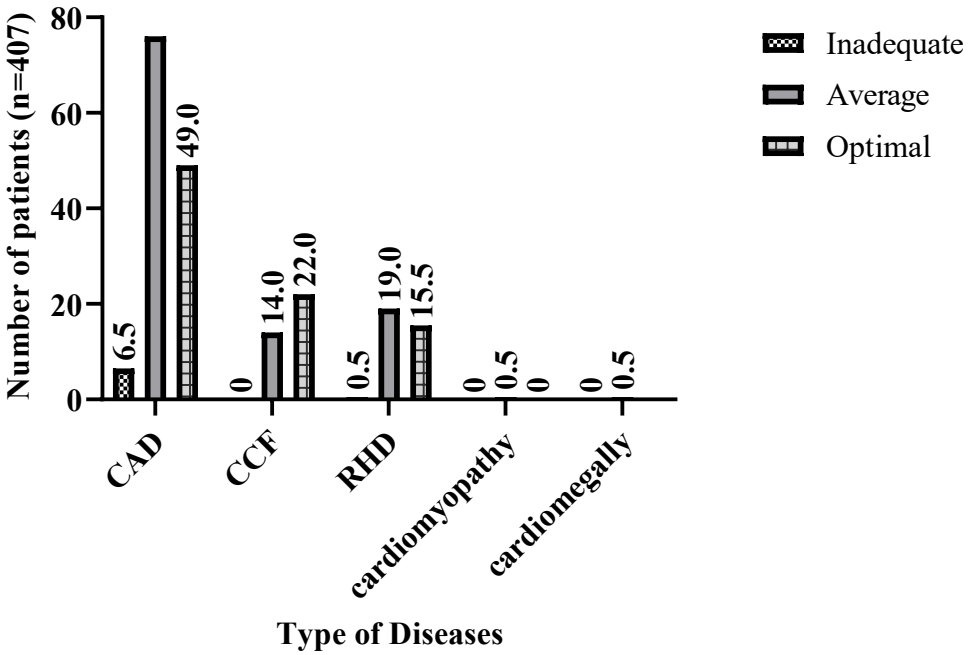

Figure 2

Table 5: WHO-QOL Bref questionnaire domain categorization

S. No.	Domain	Mean	SD	P Value
1.	Physical domain	2.910	0.06223	0.0469
2.	Psychological domain	3.018	0.01273	0.7144
3.	Social relationship domain	2.403	0.05515	0.4116
4.	Environmental domain	2.878	0.03041	0.2489

Pharmacies are in a prime position to prevent CVD because they are one of the most frequently visited businesses and the first place most people go. Currently, there are two stages to preventing CVD: primary and secondary. The WHO states that delaying the beginning of CVD is related to the primary prevention of CVD. At this point, the general population does not yet have an established CVD episode and either has the modifiable risk factors stated above or does not. When a patient is in the secondary prevention stage, they already have an established CVD episode (e.g., myocardial infarction and stroke). These patients have a very high risk of experiencing another CVD episode **[14]**.

Younger people frequently aren't aware that they can be in danger, so they might not take the necessary precautions to protect themselves. The greatest strategy to prevent death and lessen issues related to cardiac illness is to educate parents, adolescents, and young adults about the many risk factors **[1]**.

According to current data, a new epidemic of cardiovascular disease in the young population is predicted. According to INTERHEART studies, the most prevalent

risk factors for myocardial infarction (heart attack) and strokes worldwide include hypertension, diabetes, dyslipidaemia, obesity, smoking, physical activity, a poor diet, and alcohol consumption **[14-16]**.

This study investigated the prevalence of risk factors for CAD in Erode tertiary care hospitals, India, and also evaluated the quality of life (QoL) of individuals with cardiovascular illnesses. The finding contributes to the corpus of research that shows a correlation between patients' quality of life and their risk for cardiovascular disease.

Out of 407 patients, 264 (64.9% of the total) were men and 143 (35.1%) were women, which was due to an increase in risk factors, such as smoking and alcohol consumption.

The majority (77.4%) of 407 cardiovascular patients were between the age group of 29-39 years as they are unaware of the risk and most of them were older (42.1%). Of the 407 study subjects, the majority were doing moderate (61.4%), and it was observed that the majority of them have moderate strength (56.7%). Nearly half of the subjects were found to be alcoholics (42.2%), and among the 172 alcoholic patients, most of them (34.3%) were moderate drinkers

Among the total diagnosed cardiovascular disease cases, most of them were diagnosed with CAD (71.1%), followed by RHD (16.7%) and CCF (11.0%), and others with the lowest percentage were influenced by angina and MI.

Most of the individuals were classified as having an intermediate health status in each of the components of the LS7, except blood pressure, in which the ideal category (69.0%) was the predominant group.

The percentage of participants in the ideal categories for physical activity, BMI, smoking, diet, BP, blood sugar, and total cholesterol consisted of 17.9%, 46.4%, 52.4%, 69.0%, 22.8%, 34.2%, and 53.3%, respectively. The percentage of participants in the intermediate categories for physical activity, BMI, smoking, diet, BP, blood sugar, and total cholesterol consisted of 38.4%, 48.4%, 21.8%, 27.8%, 46.6%, 52.3%, and 43.7%, respectively. The percentage of participants in the poor categories for physical activity, BMI, smoking, diet, BP, blood sugar, and total cholesterol consisted of 43.7%, 5.2%, 25.8%, 3.2%, 30.6%, 13.5%, and 3.0%, respectively.

The majority of young adults presented with average (54.1%) cardiovascular health, followed by optimal (42.5%) cardiovascular health, and the least with inadequate (3.4%) cardiovascular health, which was due to a lifestyle change. A Kruskal-Wallis test is used to compare the overall health of the subjects by disease type, and a significant difference was observed between the subjects with different cardiovascular diseases.

According to this study, the mean values for the four domains-physical,

psychological, social relationships, and environmental were 2.910, 3.018; 2.403; and 2.878, respectively. The Mann-Whitney test is used to compare the difference between males and females in each domain. There were no statistical differences between females and males in any quality of life domain, except the physical domain, in which the majority of the patients had moderate to low quality of life in all four domains. Therefore, women faced problems with pain more often than men, which shows that gender affects pain.

Everyone engages in physical activity or exercise regularly. However, each person responds differently to different levels of physical activity. Physical activity and health are positively correlated, according to numerous evidence-based studies **[17]**.

LIMITATIONS

The present study's limitation is that, as a hospital-based study, it does not accurately represent population prevalence. Another drawback was the small sample size, which was influenced by the narrow age range, making it impossible to identify how much of the increased prevalence was associated with age. An additional limitation of the study was its short duration, which lasted only six months. The COVID-19 pandemic and its effects on people with cardiovascular disease (CVD) and the cardiovascular system, in general, make it clear that if data collection were done now, the outcomes might be different.

CONCLUSION

The results of the current investigation show that CAD risk factors are quite prevalent. According to the research, there is a considerable relationship between cardiovascular health and the type of disease. Patients with cardiovascular disease have decreased cardiovascular health. The study additionally looks at how cardiovascular disease affects QOL. There is a growing interest in CVD patients and the influence it has on their quality of life. Based on these findings, we suggest that there is an immediate need to create protocols for screening and preventative therapy programme to identify and manage people who are at high risk for future CAD, which should also promote the proper diet and physical exercise. Future research should assess the applicability and validity of the general CVD risk function with respect to the QoL of CVD patients.

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AUTHORS CONTRIBUTION

The study was conceived, designed and data collection were performed by Rubashree K B and Sharan A was guided by Dr. R Kameswaran. The draft of the manuscript was written by the same, augmented and rectified by Dr. K Krishnaveni. All authors read and approved the final manuscript.

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