KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING CARDIOVASCULAR DISEASE PREVENTION AMONG YOUNG ADULTS IN SOUTH INDIA: A CROSS SECTIONAL STUDY

ABSTRACT

BACKGROUND:

In the era of unhealthy diet and sedentary lifestyle, Cardiovascular Disease (CVD) is one of the major health care concern all over the world. Assessing the knowledge, attitude and practice regarding cardiovascular disease prevention among the youth adults reveals the requirement of preventive measures to build up a healthy individuals in the future.

METHODS

Cross- sectional survey involving 132 study subjects. It was conducted through self-structured questionnaire among young adults of age group 18-25 years.

RESULT

The association between CVD prevention practice and knowledge level was not statistically significant ($\chi^2 = 5.90$, $p = 0.207$). A highly significant association was found between attitude and knowledge levels ($\chi^2 = 32.54$, $p < 0.001$). The relationship between attitude and practice was not statistically significant ($\chi^2 = 0.08$, $p = 0.96$). Both positive and negative attitude groups showed nearly identical practice distributions, suggesting that attitude alone might not strongly influence actual preventive practices.

CONCLUSION

To combat the alarming rise of CVD in young Indians, we must translate scientific knowledge into actionable health practices tailored to their specific needs.

KEYWORDS

Cardiovascular disease, young adults, knowledge, attitude, practice.

INTRODUCTION

Cardiovascular disease (CVD) is a non- communicable diseases with a relevant elevation in morbidity and mortality globally [1]. In 2019, an estimation of 17.9 million people died from CVDs, representing 32% of all global deaths [2]. The shift from physically demanding to sedentary jobs as a result of industrialization of the economy combined with current consumerism and technology driven culture that leads to longer working hours, longer commutes, and less leisure time for recreational activities [2, 3, 4, 5].

Some risk factors like age, gender, genetic etc. are non- modifiable factors for the progression of CVD. But, unhealthy diet, physical inactivity, obesity etc. are included in modifiable factors [6]. By improvising health approaches and behaviors for the risk factors which are identified, which is an opportunity for the reduction of the modifiable risk factor. As a result, the risk of CVD reduces [7].

18 – 25 years old young adults are in a phase of transition from adolescence to adulthood. Middle age adults are more susceptible to obesity now a days. But, evidently the trend of obesity is steadily accelerated in young adults especially college students and university students [8][9]. During the life course, the young adults are vulnerable to an energy imbalance that leads to weight gain, which will consider insignificant at that time but later accumulates. Social, psychological and biological factors that are occurring during these transition period affect the health of the young adults [8].

In developed countries, the age group 18-25 years are now recognized as vulnerable group for unhealthy lifestyle leading to overweight and obesity. These age group are neglected when compared with children and middle aged adult due to the lifestyle changes and the consequent long term impact on the health [9][10].

Now a days the prevalence of CVD is drastically elevating globally. Concern related with the young adults are increasing because of unhealthy habits, obesity, and hypertension, it is necessary to figure out the current status of knowledge, attitudes and practice related to CVD prevention among young adults [11].

MATERIALS AND METHODS

A random sampling method was used in the study. Area under South India mainly were choose for data collection.

Based on previous studies, the final sample size was 132. Survey were conducted in young adults among the age group of 18-25 years in November – October 2024. The researcher obtained signed informed consent and explained the background of the study, the purpose, the principle of privacy and confidentiality and the precaution before conduction the survey. Inclusion criteria included young adults of age between 18-25 years old and who were willing to participate in the study. Exclusion criteria were failure to complete the questionnaire and not willing to participate.

The questionnaire used for survey were self- structured and validated and modified through experts. 20, 12 and 15 questions were included in the part of knowledge, attitude and practice regarding Cardiovascular disease risk prevention respectively. All the data were entered in Microsoft Excel Spreadsheet and proper analysis was carried out using R version 4.4.0. The study was conducted after protocol approval by the Institutional Research Committee of Ezhuthachan College of Pharmaceutical Sciences.

Statistical analysis : Categorical variables were expressed as frequency and percentage and continuous variables were expressed as mean and standard deviation. The chi-square tests was performed to assess the associations between demographic, socioeconomic, and health-related factors and the knowledge, attitudes, and practices (KAP) regarding cardiovascular disease (CVD) prevention among young adults. A p value less than .05 was considered as statistically significant. Data analysis was performed using “jamovi 2.5.3”

RESULTS

Demographic characteristics

In this survey, a total of 132 questionnaire were distributed. But, 130 were returned. Among the 130 participants, the sample consisted predominantly of females (71.5%), with males

representing only 28.5%. About half of the participants (51.5%) reported not living away from home, while 48.5% lived away. Significant proportion of participants (76.9%) reported no family history of chronic illness, while 23.1% did.

This distinction is essential, as family history can affect individual awareness and preventive attitudes towards diseases like CVD. Most family heads had higher secondary education (24.6%) or were graduates/post-graduates (37.7%), indicating a relatively educated demographic. Higher education levels among family heads could correlate with better health awareness and access to information on disease prevention.

Occupations varied, with 23.8% of family heads working in professional roles, 30.8% as skilled workers, and 45.4% in other occupations. Occupation type may reflect socioeconomic status, potentially influencing participants' access to health resources and information.

Income distribution showed that the highest proportion of participants (29.2%) fell within the middle-income range (20,045 - 40,092 INR), while 21.5% had a family income below 10,024 INR. Economic status can play a vital role in accessibility to nutritious food, physical activity opportunities, and health awareness resources.

Average Weight 59.4± 14.8 Kg and the weight ranges from 35 to 148 Kg. Average Height 162.2± 9.1 cm and the height ranges from 140 to 182 cm. Average BMI 22.6± 5.3 and the BMI ranges from 11.7 to 57.8. In terms of BMI categories, 57.7% had normal weight, 19.2% were underweight, 16.2% overweight, and 6.9% obese. This weight distribution indicates that while the majority were of normal weight, there is a significant portion at risk due to underweight and overweight statuses, both of which can impact CVD risk.

Table: 1 Socio- demographic characteristics of participants (N= 130)

Characteristics	**Variables**	**Frequency (N)**	**Percent(%)**
GENDER	Female	93	71.5
	Male	37	28.5
ARE YOU STAYING AWAY FROM HOME	No	67	51.5
	Yes	63	48.5
FAMILY HISTORY OF CHRONIC ILLNESS	No	100	76.9
	Yes	30	23.1
	Primary	4	3.1
	High school	30	23.1

EDUCATION OF THE HEAD OF THE FAMILY	Higher secondary	32	24.6
	Graduate or post graduate	49	37.7
	Professional	15	11.5
OCCUPATION OF THE HEAD OF THE FAMILY	Professional	31	23.8
	Skilled worker	40	30.8
	Others	59	45.4
TOTAL MONTHLY FAMILY INCOME	>40092	23	17.7
	20045 - 40092	38	29.2
	14996 - 20044	25	19.2
	10024 - 14995	16	12.3
	<10024	28	21.5
BMI	Under weight	25	19.2
	Normal	75	57.7
	Over weight	21	16.2
	Obese	9	6.9

KNOWLEDGE

Knowledge level regarding cardiovascular disease prevention among the participants was assessed by structured questionnaire consists of 20 item with 1 score for correct response and 0 score for false response. Total score of the tool ranges from 0 to 20. In the present study, average Knowledge score 17.1±3.9 the total score ranges from 4 to 20. Lower tercile of the score considered (≤16) as Fair middle tercile as (17-19) Good knowledge and upper tercile (Score 20) as excellent knowledge. Based on terciles, 33.8% had "fair" knowledge, 26.9% "good," and 39.2% "excellent."

ATTITUDE

Attitude of the participants regarding cardiovascular disease prevention among the participants was assessed by a questionnaire consists of 12 items. Average Attitude score 26.9±5.8 and the score ranges from 13 to 36, Score ranges from 13 to 26 considered as negative attitude and >26 as positive attitude. The present study reveals that 45.4% displaying a "negative" attitude and 54.6% a "positive" attitude.

PRACTICE

Practice level regarding cardiovascular disease prevention among the participants was assessed by a tool consists of 15 items. Average Practice score 35.0±3.6 the total score ranges from 26 to 43. Score <34 as fair, 34 to 36 as good >36 as excellent practice. Participants were categorized into "fair" (31.5%), "good" (36.9%), and "excellent" (31.5%) practice levels.

Table: 2 Knowledge, attitude and practice towards CVD prevention

KNOWLEDGE	Frequency (N)	Percent (%)
Fair	44	33.8
Good	35	26.9
Excellent	51	39.2
ATTITUDE		
Negative	59	45.4
Positive	71	54.6
PRACTICE		
Fair	41	31.5
Good	48	36.9
Excellent	41	31.5

Analysis of Knowledge for CVD prevention among young adults

A larger proportion of females (46.2%) had "excellent" knowledge compared to males (21.6%). Conversely, a higher percentage of males (43.2%) fell into the "fair" knowledge category, suggesting that females in this sample generally possess higher knowledge about CVD prevention. Participants living away from home had a slightly higher percentage of "excellent" knowledge (41.3%) compared to those staying at home (37.3%), which might reflect exposure to different health information or independence in managing health. The association suggests a trend where participants with a family history of chronic illness had higher levels of "excellent" knowledge (53.3%) compared to those without (35%). This could imply that personal or familial health experiences contribute to greater awareness of disease prevention. Those with professional family heads had the highest proportion of "excellent" knowledge (53.3%), potentially indicating that higher education among parents may slightly benefit the health knowledge of young adults. participants whose family heads were professionals had a higher proportion of "excellent" knowledge (45.2%) than those whose family heads were skilled workers (32.5%) or had other occupations (40.7%). Across all income levels, the distribution of knowledge categories was relatively balanced, suggesting that family income alone does not strongly impact CVD prevention knowledge. Those categorized as "overweight" and "obese" had higher proportions of "excellent" knowledge (57.1% and 55.6%, respectively) compared to those with "normal" BMI (30.7%). This may suggest that individuals with higher BMI could be more aware of health risks, potentially due to personal health concerns.

Table: 3 Analysis of Knowledge for CVD prevention among young adults

GENDER	Knowledge	Total

	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Female	28	30.1	22	23.7	43	46.2	93	100
Male	16	43.2	13	35.1	8	21.6	37	100
Total	44	33.8	35	26.9	51	39.2	130	100
ARE YOU STAYING AWAY FROM HOME	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
No	20	29.9	22	32.8	25	37.3	67	100
Yes	24	38.1	13	20.6	26	41.3	63	100
Total	44	33.8	35	26.9	51	39.2	130	100
FAMILY HISTORY OF CHRONIC ILLNESS	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
No	39	39	26	26	35	35	100	100
Yes	5	16.7	9	30	16	53.3	30	100
Total	44	33.8	35	26.9	51	39.2	130	100
EDUCATION OF THE HEAD OF THE FAMILY	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Primary	1	25	2	50	1	25	4	100
High school	11	36.7	7	23.3	12	40	30	100
Higher secondary	9	28.1	13	40.6	10	31.3	32	100
Graduate or post graduate	18	36.7	11	22.4	20	40.8	49	100
Professional	5	33.3	2	13.3	8	53.3	15	100
Total	44	33.8	35	26.9	51	39.2	130	100
OCCUPATION OF THE HEAD OF THE FAMILY	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Professional	6	19.4	11	35.5	14	45.2	31	100
Skilled worker	19	47.5	8	20	13	32.5	40	100
Others	19	32.2	16	27.1	24	40.7	59	100
Total	44	33.8	35	26.9	51	39.2	130	100
TOTAL MONTHLY FAMILY INCOME	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
>40092	7	30.4	7	30.4	9	39.1	23	100
20045 - 40092	15	39.5	11	28.9	12	31.6	38	100
14996 - 20044	9	36	5	20	11	44	25	100
10024 - 14995	4	25	4	25	8	50	16	100
<10024	9	32.1	8	28.6	11	39.3	28	100
Total	44	33.8	35	26.9	51	39.2	130	100

BMI	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Under weight	4	16	10	40	11	44	25	100
Normal	33	44	19	25.3	23	30.7	75	100
Over weight	5	23.8	4	19	12	57.1	21	100
Obese	2	22.2	2	22.2	5	55.6	9	100
Total	44	33.8	35	26.9	51	39.2	130	100

Analysis of attitude for CVD prevention among young adults

Female participants were more likely to have a positive attitude (61.3%) compared to males (37.8%), while a higher proportion of males exhibited a negative attitude (62.2%). This suggests that females in this sample are generally more positively inclined towards CVD prevention. Slightly higher positive attitudes among those staying away from home (55.6%) compared to those not living away (53.7%). Participants with a family history of chronic illness had a slightly higher positive attitude (60%) compared to those without (53%), indicating that family health history may not heavily influence attitude. Those whose family heads had higher secondary education showed a slightly higher positive attitude (65.6%), while those with professional family heads displayed a higher negative attitude (60%). Participants whose family heads were skilled workers or in other occupations had slightly higher positive attitudes (52.5% and 61%, respectively), while those with professional family heads showed a higher negative attitude (54.8%). Participants from lower income brackets (10,024 - 14,995 INR and <10,024 INR) displayed higher positive attitudes (68.8% and 67.9%, respectively) compared to those from higher income brackets, suggesting a potential inverse trend where lower income may correlate with a more positive attitude towards CVD prevention. Participants categorized as obese had the highest positive attitude (88.9%), while those with normal BMI had a higher negative attitude (52%). This could suggest that individuals with higher BMI might feel a stronger need for preventive measures and thus hold a more positive attitude towards CVD prevention.

Table: 4

Analysis of attitude for CVD prevention among young adults

Gender	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%

Female	36	38.7	57	61.3	93	100
Male	23	62.2	14	37.8	37	100
Total	59	45.4	71	54.6	130	100
ARE YOU STAYING AWAY FROM HOME	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
No	31	46.3	36	53.7	67	100
Yes	28	44.4	35	55.6	63	100
Total	59	45.4	71	54.6	130	100
FAMILY HISTORY OF CHRONIC ILLNESS	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
No	47	47	53	53	100	100
Yes	12	40	18	60	30	100
Total	59	45.4	71	54.6	130	100
EDUCATION OF THE HEAD OF THE FAMILY	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
Primary	1	25	3	75	4	100
High school	13	43.3	17	56.7	30	100
Higher secondary	11	34.4	21	65.6	32	100
Graduate or post graduate	25	51	24	49	49	100
Professional	9	60	6	40	15	100
Total	59	45.4	71	54.6	130	100
OCCUPATION OF THE HEAD OF THE FAMILY	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
Professional	17	54.8	14	45.2	31	100
Skilled worker	19	47.5	21	52.5	40	100
Others	23	39	36	61	59	100
Total	59	45.4	71	54.6	130	100
TOTAL MONTHLY FAMILY INCOME	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
>40092	11	47.8	12	52.2	23	100
20045 - 40092	22	57.9	16	42.1	38	100
14996 - 20044	12	48	13	52	25	100
10024 - 14995	5	31.3	11	68.8	16	100
<10024	9	32.1	19	67.9	28	100
Total	59	45.4	71	54.6	130	100
BMI	Attitude				Total	
	Negative		Positive			
	N	%	N	%	N	%
Under weight	11	44	14	56	25	100
Normal	39	52	36	48	75	100
Over weight	8	38.1	13	61.9	21	100

Obese	1	11.1	8	88.9	9	100
Total	59	45.4	71	54.6	130	100

Analysis of practice for CVD prevention among young adults

Female participants showed a balanced distribution across practice levels, with slightly more in the "good" category (39.8%) compared to males (29.7%). However, males had a higher percentage in the "fair" category (40.5%), implying slightly lower levels of preventive practices among males. slightly higher "good" practice level for those not living away from home (40.3%) compared to those who did (33.3%). Participants with no family history showed slightly better practice, with 40% in the "good" category, while those with a family history had 43.3% in the "fair" category, suggesting family history might not heavily influence preventive practices. Among those with professional family heads, a slightly higher proportion showed "excellent" practice (46.7%). However, no clear trend was observed across other education levels. Practice levels were relatively similar across occupation types, although participants with skilled worker family heads had a slightly higher proportion in the "good" category (40%). Participants from the highest income bracket (>40,092 INR) had the highest proportion of "excellent" practice (56.5%). In contrast, those from lower income brackets (20,045 - 40,092 INR and 14,996 - 20,044 INR) had higher percentages in the "fair" category, indicating that higher income might positively influence CVD prevention practices. Participants with different BMI levels showed similar distributions across practice levels, though those classified as overweight or obese showed a higher percentage in "good" and "excellent" categories, perhaps reflecting a higher awareness of preventive practices.

Table: 5 Analysis of practice for CVD prevention among young adults

Gender	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Female	26	28	37	39.8	30	32.3	93	100
Male	15	40.5	11	29.7	11	29.7	37	100
Total	41	31.5	48	36.9	41	31.5	130	100
ARE YOU STAYING AWAY FROM HOME	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
No	18	26.9	27	40.3	22	32.8	67	100
Yes	23	36.5	21	33.3	19	30.2	63	100
Total	41	31.5	48	36.9	41	31.5	130	100

FAMILY HISTORY OF CHRONIC ILLNESS	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
No	28	28	40	40	32	32	100	100
Yes	13	43.3	8	26.7	9	30	30	100
Total	41	31.5	48	36.9	41	31.5	130	100
EDUCATION OF THE HEAD OF THE FAMILY	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Primary	1	25	3	75	0	0	4	100
High school	10	33.3	10	33.3	10	33.3	30	100
Higher secondary	10	31.3	13	40.6	9	28.1	32	100
Graduate or post graduate	15	30.6	19	38.8	15	30.6	49	100
Professional	5	33.3	3	20	7	46.7	15	100
Total	41	31.5	48	36.9	41	31.5	130	100
OCCUPATION OF THE HEAD OF THE FAMILY	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Professional	11	35.5	8	25.8	12	38.7	31	100
Skilled worker	10	25	16	40	14	35	40	100
Others	20	33.9	24	40.7	15	25.4	59	100
Total	41	31.5	48	36.9	41	31.5	130	100
TOTAL MONTHLY FAMILY INCOME	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
>40092	6	26.1	4	17.4	13	56.5	23	100
20045 - 40092	16	42.1	13	34.2	9	23.7	38	100
14996 - 20044	8	32	13	52	4	16	25	100
10024 - 14995	1	6.3	8	50	7	43.8	16	100
<10024	10	35.7	10	35.7	8	28.6	28	100
Total	41	31.5	48	36.9	41	31.5	130	100
BMI	Practice						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Under weight	8	32	7	28	10	40	25	100
Normal	25	33.3	28	37.3	22	29.3	75	100
Over weight	5	23.8	8	38.1	8	38.1	21	100
Obese	3	33.3	5	55.6	1	11.1	9	100
Total	41	31.5	48	36.9	41	31.5	130	100

The results indicate a statistically significant association between gender and knowledge level ($\chi^2 = 6.73$, $p = 0.035$). Living situation (whether participants stayed away from

home) did not show a statistically significant association with knowledge levels ($\chi^2 = 2.58$, p = 0.276). Personal or familial health experiences contribute to greater awareness of disease prevention. But, it was not statistically significant ($\chi^2 = 5.52$, p = 0.063). The education level of the family head was not significantly associated with participants' knowledge ($\chi^2 = 6.68$, p = 0.572). The occupation of the family head showed no significant association with knowledge levels ($\chi^2 = 6.50$, p = 0.165). The occupation of the family head showed no significant association with knowledge levels ($\chi^2 = 6.50$, p = 0.165). Family income did not show a statistically significant relationship with knowledge ($\chi^2 = 2.71$, p = 0.951). While the association between BMI and knowledge was not statistically significant ($\chi^2 = 11.71$, p = 0.069), there is a noteworthy pattern.

Gender was significantly associated with attitude ($\chi^2 = 5.87$, p = 0.015). The relationship between living away from home and attitude was not statistically significant (χ^2 = 0.04, p = 0.835). There was no significant association between family history of chronic illness and attitude ($\chi^2 = 0.46$, p = 0.499). Family head's education level did not significantly correlate with participants' attitudes ($\chi^2 = 4.21$, p = 0.379). Occupation of the family head showed no significant relationship with attitude ($\chi^2 = 2.17$, p = 0.339). The association between family income and attitude was not statistically significant ($\chi^2 = 5.79$, p = 0.215). Although not statistically significant ($\chi^2 = 6.06$, p = 0.109), there was a noticeable pattern regarding BMI.

No significant association was found between gender and practice levels ($\chi^2 = 2.11$, p = 0.349). The association between living away from home and practice was also insignificant ($\chi^2 = 1.46$, p = 0.482). Family history of chronic illness showed no significant association with practice levels ($\chi^2 = 2.86$, p = 0.239). Education level of the family head was not significantly associated with practice ($\chi^2 = 5.63$, p = 0.689) No significant relationship was found between the occupation of the family head and practice levels ($\chi^2 = 3.52$, p = 0.475). A significant association was found between family income and practice levels ($\chi^2 = 17.75$, p = 0.023). No significant association was observed between BMI and practice levels ($\chi^2 = 4.04$, p = 0.671).

Table: 6 Chi- square test of KAP for CVD prevention among young adults

	KNOWLEDGE			ATTITUDE			PRACTICE		
VARIBLES	χ^2	df	p	χ^2	df	p	χ^2	df	p
GENDER	6.73	2	0.035	5.87	1	0.015	2.11	2	0.349

ARE YOU STAYING AWAY FROM HOME	2.58	2	0.276	0.04	1	0.835	1.46	2	0.482
EDUCATION OF THE HEAD OF THE FAMILY	6.68	8	0.572	4.21	4	0.379	5.63	8	0.689
FAMILY HISTORY OF CHRONIC ILLNESS	5.52	2	0.063	0.46	1	0.499	2.86	2	0.239
OCCUPATION OF THE HEAD OF THE FAMILY	6.50	4	0.165	2.17	2	0.339	3.52	4	0.475
TOTAL MONTHLY FAMILY INCOME	2.71	8	0.951	5.79	4	0.215	17.75	8	0.023
BMI	11.71	6	0.069	6.06	3	0.109	4.04	6	0.671

The association between CVD prevention practice and knowledge level was not statistically significant ($\chi^2 = 5.90$, $p = 0.207$). A highly significant association was found between attitude and knowledge levels ($\chi^2 = 32.54$, $p < 0.001$). The relationship between attitude and practice was not statistically significant ($\chi^2 = 0.08$, $p = 0.96$). Both positive and negative attitude groups showed nearly identical practice distributions, suggesting that attitude alone might not strongly influence actual preventive practices.

Table: 7 Analysis of knowledge and attitude with practice among young adults

Practice	Knowledge						Total	
	Fair		Good		Excellent			
	N	%	N	%	N	%	N	%
Fair	15	36.6	12	29.3	14	34.1	41	100
good	17	35.4	16	33.3	15	31.3	48	100
Excellent	12	29.3	7	17.1	22	53.7	41	100
Total	44	33.8	35	26.9	51	39.2	130	100
Attitude	Knowledge						Total	
	Fair		Good		Excellent			
			N	%	N	%	N	%
Negative	32	54.2	19	32.2	8	13.6	59	100
Positive	12	16.9	16	22.5	43	60.6	71	100
Total	N	%	35	26.9	51	39.2	130	100
Attitude	Practice						Total	Attitude
	Fair		Good				Fair	Good
	N	%		N	%		N	%
Negative	19	32.2	21	35.6	19	32.2	59	100
Positive	22	31	27	38	22	31	71	100
Total	41	31.5	48	36.9	41	31.5	130	100

DISCUSSION

This cross-sectional study highlights significant patterns and associations that deepen our understanding of how various factors contribute to the knowledge and prevention practices around CVD among young adults, a group particularly vulnerable to the risk factors leading to CVD. Given the rise in lifestyle diseases globally, especially among younger populations due to sedentary habits, poor diet, and obesity, this study is particularly timely and essential.

Females constituted the majority (71.5%), suggesting a greater representation of women, which could influence the overall findings. Similar results were obtained from studies conducted by *O'Neil A et.al* and *Lampinen EK et. al* [14, 15]. Moreover, family history of chronic illness appeared to influence knowledge, as participants with such a background were more likely to have excellent knowledge scores. While this association was not statistically significant, it underscores the potential influence of personal and familial experiences with health issues on awareness levels. The results of the study are consistent with the result of *Niermann CYN et al* [16]. Interestingly, higher education among family heads did not correlate significantly with participants' knowledge, suggesting that individual or direct educational initiatives may be more impactful than background education levels in imparting knowledge. Family income was significantly associated with practice levels, with higher-income participants showing a greater proportion in the "excellent" category, indicating that financial resources may enable better adherence to preventive measures, such as access to healthier food, gym memberships, or healthcare services *Akter F et al* [17].

Despite its comprehensive findings, the study has limitations that future research could address. The cross-sectional design precludes conclusions about causality, so longitudinal studies would be valuable in assessing how knowledge and attitudes develop and influence practices over time. Additionally, the sample's predominance of females may limit the generalizability of the findings across genders, especially given the observed gender differences in knowledge, attitudes, and practices. Future studies could focus on a more balanced sample or examine specific male-targeted interventions to enhance CVD prevention behaviors among young men.

Furthermore, exploring the psychological or motivational factors that mediate the relationship between knowledge and practice could enhance understanding of how to encourage health-positive behaviors. For instance, assessing self-efficacy, perceived susceptibility to CVD, or

social support systems could illuminate why certain individuals fail to engage in preventive practices despite high knowledge levels.

The findings reveal essential implications for public health strategies. Firstly, the disparity between knowledge and practice suggests that awareness campaigns alone may not be sufficient to drive behavioral change. Integrating knowledge with practical interventions, such as community fitness programs, dietary support, and routine screenings, could enhance the translation of knowledge into practice. Additionally, gender-based interventions could be beneficial, given that females in this study exhibited both higher knowledge and positive attitudes toward prevention.

The inverse association between income and attitude further suggests that lower-income individuals may be more receptive to health messages if access to preventive resources is increased. Public health initiatives tailored to lower-income groups could thus yield substantial gains in preventive practices by leveraging this positive outlook and addressing barriers to resources.

CONCLUSION

This study sheds light on the complex interplay of demographic, socioeconomic, and attitudinal factors in shaping knowledge, attitudes, and practices regarding CVD prevention among young adults in South India. While high levels of knowledge are evident, there remains a significant gap in converting this awareness into preventive action. Factors such as gender and income play notable roles in influencing attitudes and practices, with females generally more positive and higher-income participants more engaged in preventive behaviors. However, these findings also highlight the potential for targeted interventions to bridge the knowledge-practice gap, particularly by focusing on accessible and practical health resources for lower-income populations and fostering a supportive environment for young men to engage in preventive practices.

The rising prevalence of CVD among younger populations underscores the urgency of translating knowledge into sustainable health behaviors. By addressing these demographic and socioeconomic nuances in public health strategies, there is significant potential to curb the

incidence of CVD and foster a culture of preventive health practices among young adults in India.

REFERENCES

1. Institute of Medicine (US) Committee on Preventing the Global Epidemic of Cardiovascular Disease: Meeting the Challenges in Developing Countries In: V Fuster and BB Kelly, editors. Promoting cardiovascular health in the developing world: A critical challenge to achieve global health. Washington, DC: National Academies Press (US) (2010)

2. Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Chang AR, Cheng S, Chiuve SE, Cushman M, Delling FN, Deo R, de Ferranti SD, Ferguson JF, Fornage M, Gillespie C, Isasi CR, Jiménez MC, Jordan LC, Judd SE, Lackland D, Lichtman JH, Lisabeth L, Liu S, Longenecker CT, Lutsey PL, Mackey JS, Matchar DB, Matsushita K, Mussolino ME, Nasir K, O'Flaherty M, Palaniappan LP, Pandey A, Pandey DK, Reeves MJ, Ritchey MD, Rodriguez CJ, Roth GA, Rosamond WD, Sampson UKA, Satou GM, Shah SH, Spartano NL, Tirschwell DL, Tsao CW, Voeks JH, Willey JZ, Wilkins JT, Wu JH, Alger HM, Wong SS, Muntner P., American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart Disease and Stroke Statistics-2018 Update: A Report from the American Heart Association. Circulation. 2018 ;137(12):e67-e492.

3. US Preventive Services Task Force. Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, Doubeni CA, Epling JW, Kemper AR, Kubik M, Landefeld CS, Mangione CM, Silverstein M, Simon MA, Tseng CW, Wong JB. Risk Assessment for Cardiovascular Disease with Nontraditional Risk Factors: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2018; 320(3):272-80.

4. Fox CS, Coady S, Sorlie PD, Levy D, Meigs JB, D'Agostino RB, Wilson PW, Savage PJ. Trends in cardiovascular complications of diabetes. *JAMA*. 2004; 292(20):2495-9.

5. Vasan RS, Sullivan LM, Wilson PW, Sempos CT, Sundström J, Kannel WB, Levy D, D'Agostino RB. Relative importance of borderline and elevated levels of coronary heart disease risk factors. Ann Intern Med. 2005; 142(6):393-402.

6. Joseph, P , Leong, D , McKee, M , Anand, SS , Schwalm, JD , Teo, K, et al. Reducing the global burden of cardiovascular disease, part 1: the epidemiology and risk factors. *Circ Res.* 2017; 121:677–94.

7. Pucci, G , Bisogni, V , Battista, F , D'Abbondanza, M , Anastasio, F , Crapa, ME, et al. Association between ideal cardiovascular health and aortic stiffness in Italian adolescents. The MACISTE study. *Nutr Metab Cardiovasc Dis*. 2021; 31:2724–32.

8. Anderson DA, Shapiro JR, Lundgren JD. The freshman year of college as a critical period of weight gain: an initial evaluation. *Eat Behaviours*. 2003;4:367.

9. Lowry R, Galuska DA, Fulton JE, Wechsler H, Kann L, Collins JL. Physical activity, food choice, and weight management goals and practices among US college students. *Med Am J Prev*. 2000;18:18–27

10. Aucott L, Poobalan A, McCallum M, Smith WCS. Mental wellbeing related to lifestyle and risky behaviours in 18–25 year old: evidence from North East Scotland. *Int J Pub Health Res*. 2014; 4:431–40.

11. Jekielek S, Brown B. The transition to adulthood: characteristics of young adults ages 18 to 24 in America. 1–41. 2005. Washington, DC, The Annie E. Casey Foundation, Population Reference Bureau and Child trends.

12. Poobalan AS, Aucott LS, Precious E, Crombie IK, Smith WC. Weight loss interventions in young people (18 to 25 year olds): a systematic review. *Obes Rev*. 2010;11:580–92.

13. Akter, F , Rashid, SMM , Alam, N , Lipi, N , Qayum, MO , Nurunnahar, M, et al. Knowledge, attitude and practice of diabetes among secondary school-going children in Bangladesh. *Front Public Health*. 2022; 10:1047617.

14. O'Neil A, Scovelle AJ, Milner AJ, Kavanagh A. Gender/sex as a social determinant of cardiovascular risk. *Circulation*. 2018; 137:854–64.

15. Lampinen EK, Eloranta AM, Haapala EA, Lindi V, Väistö J, Lintu N, et al. Physical activity, sedentary behavior, and socioeconomic status among Finnish girls and boys aged 6–8 years. *Eur J Sport Sci*. 2017; 17:462–72.

16. Niermann CYN, Spengler S, Gubbels JS. Physical activity, screen time, and dietary intake in families: a cluster-analysis with mother-father-child triads. *Front Public Health*. 2018; 6:276.

17. Akter F, Rashid SMM, Alam N, Lipi N, Qayum MO, Nurunnahar M, et al. Knowledge, attitude and practice of diabetes among secondary school-going children in Bangladesh. *Front Public Health*. 2022; 10:1047617