

Exploring health-care seeking behavior among patients with ischemic heart disease and stroke: A cross-sectional study in a tertiary care Centre in South India



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Submission: 23-02-2022

Revision: 04-03-2023

Publication: 01-04-2023

ABSTRACT

Background: Ischemic heart disease (IHD) and stroke represent the leading cause of mortality globally. Delays in seeking medical attention that result in diagnostic and treatment delays are significant roadblocks in achieving the best possible treatment outcomes for IHD and stroke. **Aims and Objectives:** This study aims to assess the pattern of healthcare seeking behavior among patients of IHD and stroke in a tertiary care hospital at Salem District in Tamil Nadu, South India. **Materials and Methods:** This cross-sectional study was conducted among 250 patients of IHD and stroke. A validated and structured questionnaire was used to collect information on socio-demographic details, knowledge, and health-care seeking behavior with regard to IHD and stroke based on the Health Belief Model. **Results:** The mean age of study participants was 60 years with a male preponderance (56%). About 75% of IHD patients and 61.9% of stroke patients had no formal education. The prevalence of hypertension (74%) was higher than diabetes mellitus (45.6%) among the study subjects. The seriousness of the initial symptoms of IHD and stroke was perceived only by 7.75% of IHD patients and 2.23% of stroke patients. Alarming, 39.66% of IHD patients and 61.2% of stroke patients were not aware of any risk factors for IHD and Stroke. Only 21.56% of IHD patients and 14.17% of stroke patients sought immediate medical assistance whereas the others ignored the symptoms or did not undergo treatment even after knowing the symptoms of the disease. **Conclusion:** This study depicted suboptimal healthcare seeking behavior and significant lack of knowledge about risk factors, initial symptoms, preventive measures, and reasons for pre hospital delay related to IHD and stroke. The study yields valuable references to incorporate the pattern of health-care seeking response of the community along with their sociocultural and economic factors in designing and implementation of any health program.

Key words: Ischemic heart disease; Stroke; Health belief model; Knowledge

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v14i4.52724

E-ISSN: 2091-0576

P-ISSN: 2467-9100

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INTRODUCTION

In 2019, the World Health Organization (WHO) estimated that ischemic heart disease (IHD) and Stroke, the two leading causes of death worldwide, would account for a significant 85% of the 17.9 million deaths worldwide from cardiovascular disease.¹ India accounts for over one fifth of the global cardiovascular deaths and is currently

witnessing an upsurge in early cardiovascular deaths.² IHDs are complex inflammatory diseases in which the coronary arteries that deliver oxygen to the heart are remodeled and narrowed.³ An abrupt compromise of cerebral perfusion, vasculature, or a cerebrovascular accident is referred to as a stroke. About 85% of strokes are caused by ischemic etiology and remaining is contributed by hemorrhagic etiology. According to the WHO, 3.4 million women and

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3.8 million men die due to cardiovascular illnesses every year worldwide. IHD and stroke occupy crucial positions among leading causes of total Disability-adjusted life years lost across all Socio-demographic Index Quintiles globally.¹ Majority of IHDs and strokes are preventable when their modifiable risk factors are identified and managed at earlier stages. The time of seeking healthcare is a critical factor affecting outcomes for both stroke and IHD. Delay in seeking healthcare leading to diagnostic delay and treatment delay are major setbacks in achieving optimal treatment outcomes in IHD and stroke. The ignorance and faulty health care decisions leading to delay in health-care seeking behavior in diseases such as IHD and stroke often pave way to high cardiovascular death tolls in majority of the low and middle income countries. In spite of structured health programs, poor health-care seeking behavior combined with difficulty to access and afford healthcare makes it a major cause for the rising burden of mortality and morbidity due to IHD and stroke.

Any action or inaction made by people who believe they have a health issue or are unwell with the intention of obtaining a suitable treatment is considered health-care seeking behavior, which is a multidimensional concept.⁴ Perceptions of local healthcare needs, process of health decision making among people, socio-demographic, ethnic and cultural facets are the key components in understanding healthcare behavior of a disease.

Despite several theories and models which throw light on the concept of health care seeking behavior, the health belief model is the most commonly used conceptual model which encompasses six components, namely, perceived seriousness, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and cues to action to predict healthcare behavior. Although there is previous research on the health-care seeking behavior related to cardiac diseases in India, these existing studies have so far dealt only with the awareness among various populations

about cardiovascular diseases broadly. Furthermore, there is a dearth of studies on health-care seeking behavior among patients with incident IHD and stroke in Southern India.

Aims and objectives

The aim of the study is to assess the pattern of health-care seeking behavior among patients of IHD and stroke in a tertiary care hospital at Salem district in Tamil Nadu, South India.

MATERIALS AND METHODS

This is a hospital-based observational descriptive cross-sectional study to explore the healthcare seeking behavior among the patients of IHD and stroke in a tertiary care hospital at Salem for a period of 6 months, between April and September 2019. A total of 271 diagnostically confirmed cases of IHD (147 cases) and stroke (124 case) patients were admitted during the study period in of which 250 admitted patients of stroke (134) and IHD (116) were included in this study and assessed for the healthcare seeking behavior. The study was initiated after obtaining clearance from the Institutional Human Ethics Committee. Data was collected through bed-side interviews. As there are no similar studies in the South India, assuming prevalence of optimal health-care seeking behavior among IHD and stroke patients to be 50%, a relative error of 13% of prevalence, 95% confidence interval, and 10% non-response rate, the total sample size calculated was 232 and hence rounded off to 250. Inclusion criteria were diagnostically confirmed IHD and stroke patients of both sexes above 18 years who were undergoing treatment for the same. Patients with cognitive impairment/mental illness as confirmed by a specialist and those with an inability to communicate were excluded from the study. A validated semi-structured questionnaire was framed based on the components of the health belief model (Figure 1) and several existing literature on health-seeking

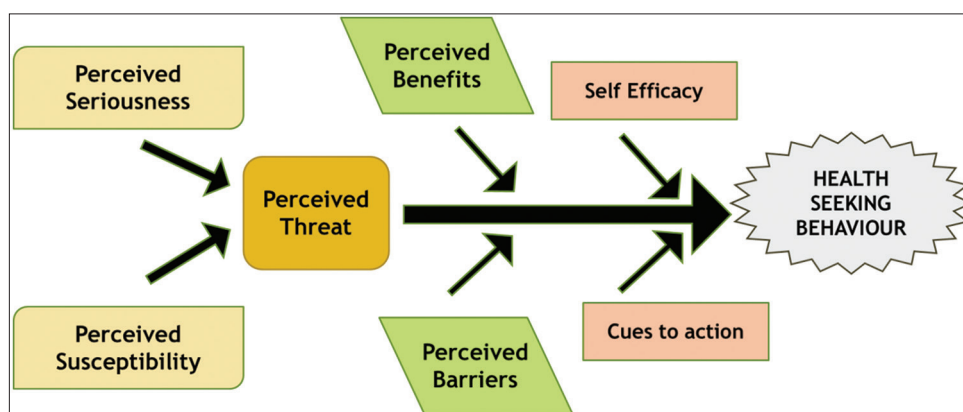


Figure 1: Health belief model

behavior were used as references. The questionnaire was divided into three sections: Patient information, socio-demographic details, and evaluation of health-care seeking behavior. The health belief model encompasses six components/contracts which predict health behavior: Perceived seriousness, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and cues to action.⁵

This model was originally devised for preventive health behaviors, later it was adopted to predict health behavior in many health conditions such as breast cancer, back pain, malaria, diabetes, stroke, and HIV. The model is based on the idea that behavior is likely to change under subjective situations. Based on the components of the Health belief Model, the questionnaire included three questions on perceived seriousness, which refers to an individuals' beliefs about the severity or consequences the disease might have on him/her if actions are not taken; two questions on perceived susceptibility, which refers to an individuals'

own beliefs regarding the risk of contracting an illness; two questions on perceived benefits, which signifies an individuals' own judgment on the advantages of adopting and continuing with the proposed actions to reduce the severity or consequences of the disease; two questions on perceived barriers, which refers to an individual's evaluation as to what would stop him/her from adopting the new behavior; and four questions on self-efficacy and cues to action. Self-efficacy refers to an individuals' belief in him/herself to perform the new behavior successfully. Furthermore, five questions were asked to assess the knowledge of the disease. The questionnaire was translated to the local language and validated by a pilot study before the start of the main study. Patient information was obtained using hospital records and the socio-demographic details were collected from the subjects and his/her attender after obtaining written informed consent. Data entry was done in Microsoft Excel 2019 and analyzed using SPSS version 20. Descriptive statistics were used to present the data.

Table 1: Socio-demographic details of study subjects

Parameters	IHD patients (n=116)		Stroke patients (n=134)		Total patients (n=250)	
	n	%	n	%	n	%
Age						
Median age (male)	60	-	60	-	60	-
Median age (female)	64	-	60	-	60	-
Gender						
Male	68	58.6	72	53.7	140	56.0
Female	48	41.4	62	46.3	110	44.0
Locality						
Urban	43	37.1	53	39.6	96	38.4
Rural	73	62.9	81	60.4	154	61.6
Patient delay						
<6 h	76	65.5	22	16.4	98	39.2
6–12 h	32	27.6	81	60.4	113	45.2
>12 h	8	6.9	31	23.1	39	15.6
No. of Hospitals referred and consulted previously						
0	53	45.7	62	46.3	115	46.0
1	52	44.8	69	51.5	121	48.4
≥2	11	9.5	3	2.2	14	5.6
Education						
No formal education	87	75.0	83	61.9	170	68.0
Primary	15	12.9	24	17.9	39	15.6
Secondary	13	11.2	27	20.1	40	16.0
Higher secondary or graduate	1	0.9	0	0.0	1	0.4
Occupation						
Daily wages	32	27.6	64	47.8	96	38.4
Others/Homemaker	56	48.3	63	47.0	119	47.6
Unemployed	14	12.1	7	5.2	21	8.4
Monthly income						
≤5000	49	42.2	57	42.5	106	42.4
>5000–≤10,000	54	46.6	59	44.0	113	45.2
>10,000	13	11.2	18	13.4	31	12.4
Marital status						
Married	98	84.5	105	78.4	203	81.2
Separated/Widowed/Unmarried	18	15.5	29	21.6	47	18.8
Conveyance						
Ambulance	66	56.9	86	64.2	152	60.8
Own	50	43.1	48	35.8	98	39.2

RESULTS

A total of 250 patients admitted of stroke (134) and IHD (116) were included in this study and assessed for healthcare

Table 2: Personal habits of study subjects

Parameters	IHD patients n=116		Stroke patients n=134		Total patients n=250	
	n	%	n	%	n	%
Diet						
Vegetarian	14	12.1	13	9.7	27	10.8
Non-Vegetarian/ Mixed	102	87.9	121	90.3	223	89.2
Alcohol						
Never	96	82.8	102	76.1	198	79.2
Past	8	6.9	19	14.2	27	10.8
Current	12	10.3	13	9.7	25	10
Tobacco usage						
Never	73	62.9	74	55.2	147	58.8
Past	19	16.4	36	26.9	55	22
Current	24	20.7	24	17.9	48	19.2

Table 3: Comorbidities of study subjects

Parameters	IHD patients n=116		Stroke patients n=134		Total patients n=260	
	n	%	n	%	n	%
Diabetes mellitus	56	48.3	58	43.3	114	45.6
Hypertension	77	66.4	108	80.6	185	74.0
Others	2	1.7	5	3.7	7	2.8
Previous similar Episode(s)						
0	63	54.3	89	66.4	152	60.8
1	38	63.3	32	53.3	70	28.0
≥2	15	12.9	13	9.7	28	11.2

Table 4: Knowledge on risk factors, preventive measures and symptoms of IHD and stroke among study participants

S. No.	Category	Grading	IHD patients		Stroke patients	
			n=116	%	n=134	%
1.	Knowledge on risk factors	Not aware of any risk factor	46	39.66	82	61.2
		Aware of Single risk factor only	1	0.86	4	2.98
		Aware of two risk factors	44	37.94	29	21.65
		Aware of three risk factors	21	18.10	16	11.94
		Aware of four risk factors	4	3.44	1	0.74
		Aware of five risk factors	0	0	2	1.49
2.	Knowledge on preventive measures	Not aware of any preventive measure	48	41.39	93	69.5
		Aware of 1 preventive measure only	15	12.93	6	4.47
		Aware of 2 preventive measures	19	16.38	14	10.45
		Aware of 3 preventive measures	22	18.97	12	8.96
		Aware of 4 preventive measures	8	6.89	5	3.73
		Aware of 5 preventive measures	4	3.44	4	2.98
3.	Knowledge on symptoms	Not aware of any symptom	41	35.35	92	68.66
		Aware of 1 symptom only	32	27.59	9	6.71
		Aware of 2 symptoms	24	20.7	18	13.45
		Aware of 3 symptoms	12	10.34	5	3.73
		Aware of 4 symptoms	3	2.58	7	5.22
		Aware of 5 symptoms	4	3.44	3	2.23

seeking behavior. The mean age of study participants was 60 years with a male preponderance (56%). Around 75% of IHD (n=87) and 61.9% of stroke patients (n=83) did not undergo any formal education. Majority of men were occupied with daily wages and in case of women equal number of homemakers and daily wages were affected in both IHD and stroke. About 15.5% of IHD (n=18) and 21.6% of stroke (n=29) patients were unmarried. About 88.8% of IHD (n=93) and 86.5% of Stroke (n=116) had their monthly income less than ten thousand rupees. Nearly 65.5% of IHD patients (n=76) reached the hospital within 6 h of appearance of symptoms and about 60.4% of stroke patients (n=81) reached in 6–12 h after onset of symptoms. About 56.9% of IHD patients and 64.2% of stroke patients reached the health facility through ambulance services (Table 1).

There are relatively more tobacco users than alcoholics in the study sample. About 89.2% of the study sample (n=223) followed a mixed diet habit (Table 2).

Hypertension (74%; n=185) was a relatively more common co-morbid condition than Diabetes mellitus (45.6%; n=114) among the study subjects. Newly incident cases are relatively higher in number than the recurrent cases in both IHD and stroke (Table 3).

Table 4 shows that 39.66% of IHD patients and 61.2% of stroke patients were not aware of any risk factors for IHD and stroke. Majority of study subjects had no awareness about the preventive measures (41.39% of IHD patients and 69.5% of stroke patients) and symptoms (35.35% of IHD patients and 68.66% of stroke patients) of both the diseases.

Table 5: Health-care seeking behavior based on components of health belief model among study participants

S. No.	Category	Grading	IHD patients		Stroke patients	
			n=116	%	n=134	%
4(a) Perceived seriousness						
1.	Knowledge on complications of Stroke	Not aware of any complication	96	82.76	105	78.36
		Aware of only 1 complication	1	0.86	9	6.72
		Aware of 2 complications	15	12.94	13	9.71
		Aware of 3 complications	3	2.58	1	0.74
		Aware of >3 complications	1	0.86	6	4.47
2.	Knowledge on complications of IHD	Not aware of any complication	85	73.27	126	94.03
		Aware of only 1 complication	9	7.76	3	2.23
		Aware of 2 complications	16	13.79	5	3.74
		Aware of 3 complications	2	1.73	0	0
		Aware of >3 complications	4	3.45	0	0
3.	Perceived seriousness about initial symptoms	Mild	61	52.59	73	54.48
		Moderate	40	34.49	48	35.83
		Severe	9	7.75	3	2.23
		Do not know	6	5.17	10	7.46
4(b) Perceived susceptibility						
4.	Family history of previous similar illness	Yes	22	18.90	7	5.22
		No	94	81.10	127	94.78
5.	Chances of getting similar illness affecting Family members	High chances	12	10.34	8	5.97
		May/may not be affected	20	17.24	15	11.19
		Least chances	35	30.18	26	19.41
		No chance	15	12.93	9	6.71
		No idea	34	29.31	76	56.72
4(c) Perceived benefits						
6.	Possibility of better health and longevity from timely medical intervention.	Yes	109	93.96	110	82.08
		No	7	6.04	24	17.92
7.	Role of early treatment in prevention of life-long disability.	Yes	36	31.03	22	16.42
		No	80	68.97	112	83.58
4(d) Perceived barriers						
8.	Reasons for delay (if delayed) in seeking treatment (More than 1 options)	Lack of money	28	24.13	37	27.61
		Transportation difficulties	2	1.72	5	3.73
		Lack of family support	24	20.68	32	23.88
		Lack of knowledge	71	61.20	111	82.83
		Self-unwillingness	55	47.41	84	62.68
9.	Lack of self-care	Nil	22	18.96	9	6.71
		Yes	46	39.66	29	21.64
		No	70	60.34	105	78.35
4(e) Self-efficacy and cues to action						
10.	Reasons for approaching Hospital	Due to symptoms only	7	6.03	6	4.48
		Due to past experience	5	4.31	3	2.24
		Due to symptoms/past experience with the help of family members	70	60.35	41	30.60
		Due to compulsion of family members only	12	10.34	19	14.17
		Brought as an emergency	22	18.97	65	48.51
11.	Action taken for the initial symptoms by self	Sought medical assistance immediately	25	21.56	19	14.17
		Ignored the symptoms	59	50.87	70	52.24
		Knew the symptoms but did not take treatment	9	7.75	5	3.73
		Others (self-medication, etc.,)	23	19.82	40	29.86
12.	Role of Family members motivation in Health care seeking	Yes	79	68.10	88	65.67
		No	37	31.90	46	34.33
4(f) Reasons for recurrence of IHD and Stroke						
13.	Reasons for recurrence (if recurred)	Failed to take medications (Anti-hypertensives) for Few days	23	19.83	30	22.39
		Work stress	6	5.17	9	6.71
		Family Stress	6	5.17	5	3.73
		Other reasons	8	6.89	0	0
		No idea	73	62.94	90	67.17

Majority of patients with both IHD and stroke were unaware of any of the complications of both diseases. Only 7.76% of IHD and 2.23% of stroke patients perceived the seriousness

of the initial symptoms of the disease. There was no family history of similar illness in 81.1% of IHD and 94.78% of stroke patients. Majority (IHD patients - 93.96% and stroke

patients -82.08%) had a positive attitude about better health and longevity from treatment. However, most patients (IHD-68.97% and stroke-83.58%) were ignorant that early treatment can prevent life-long disability. About 61.2% IHD patients and 82.83% stroke patients attributed lack of knowledge as a cause for health seeking delay, whereas 47.41% IHD patients and 62.68% stroke patients felt self-unwillingness was the cause. Alarming, 60.34% IHD patients and 78.35% stroke patients said that they believed that they do not need to go to the hospital to heal. Around 60.35% IHD patients and 30.60% stroke patients reached hospital because of symptoms/past experience with the help of family members while 18.97% IHD patients and 48.51% stroke patients reached hospital in an unconscious state as an emergency. Only 21.56% of IHD patients and 14.17% of stroke patients sought immediate assistance whereas the others ignored the symptoms or did not undergo treatment even after knowing the symptoms of the disease. Almost 63% IHD patients and 67% stroke patients and 20% IHD patients and 22% stroke patients were aware that failure to regular medications was the cause for recurrence (Table 5).

DISCUSSION

With numerous risk factors in common, the global variation in the burden of cardiovascular diseases is still not well understood. Several studies have been done on different aspects of cardiovascular diseases to create strategies and preventive measures to curb the global burden. India has long back entered the phase of epidemiological transition where communicable diseases have been replaced by non-communicable diseases. India occupies a sizeable rank in the global cardiovascular disease mortality as the country witnesses cardiovascular deaths at an early age when compared to high income countries.⁶ This descriptive cross-sectional study is aimed to assess the pattern of health seeking behavior in incident patients of IHD and stroke. Majority of patients of both IHD and stroke were of the male gender and hailed from rural areas which may be attributed to the ignorance and inadequate healthcare seeking behavior of people particularly from rural areas. Furthermore, in our study, 75% of IHD and 62.9% of stroke patients had no formal education and majority of the IHD and stroke patients belonged to economically weaker sections thus underscoring the role of social determinants such as education and socioeconomic conditions in making health decisions and health-care utilization. Our study reveals that (82.8% and 62.9% of IHD patients) and (79.2% and 58.8% of stroke patients) had no history of alcohol or tobacco usage, respectively, in their past. Despite the limited evidence in research about the interactions of alcohol and smoking on cardiovascular health, studies by Goldstein *et al.*,⁷ and Hillbom *et al.*,⁸ show that smoking cigarettes and regular alcohol use of

three or more drinks per day serve as unmistakable risk factors for ischemic stroke. Our study warrants further region based prospective research on the effects of alcohol and tobacco in the pathogenesis of cardiovascular disorders.

The study explores the perceived seriousness, susceptibility, benefits, and barriers in health care seeking as reflected by patients with IHD and stroke by adaption of the health belief model. Majority of stroke patients (60%) had never heard of the disease they developed, while in the case of IHD, the response was 29%. IHD presenting as angina/chest pain often causes panic with the fear of death and creates relatively greater perceived threat when compared to stroke with relatively painless signs like weakness and loss of muscle power. A study by Patel *et al.*,⁹ revealed that the least identified most common stroke symptom such as sudden severe headache was the hallmark of subarachnoid hemorrhage. The lack of formal education among 68% of the total study subjects is also indicative of the gross unawareness about the role of early signs symptoms and treatment thereby exhibiting suboptimal health seeking behavior. An inverse association has been found between education and socioeconomic status with cardiovascular disease in studies by Van Lenthe *et al.*,¹⁰ and Ramsay *et al.*,¹¹ respectively.

Due to multiple reasons like ignorance, grave socioeconomic conditions, most patients present late to the out-patient department (OPD). In our study, in case of stroke, majority (60%) of patients reached in a health seeking time (time between the appearance of symptoms and appearing in hospital) of 6–12 h. But, with regard to IHD, majority (65.5%) of IHD patients presented to the OPD within 6 h. This could be because of the higher level of awareness on IHD among public than that of Stroke. A study by Ranawaka *et al.*,¹² in a Sri Lankan tertiary care center found that stroke awareness in patients who have had an incident stroke is unsatisfactory and is no better than in people who have not had a stroke or IHD.

It is promising to note that 19.83% of IHD patients and 22.39% of stroke patients had knowledge that noncompliance with antihypertensive drugs and other medications might lead to recurrence of IHD and stroke. A retrospective cohort study by Yeo *et al.*,¹³ done in Singapore reported that the risk of stroke recurrence was higher in patients with low adherence to antithrombotic drugs and statins.

This study is crucial as it provides new evidence that health-care seeking for IHD and stroke is low especially with regard to awareness about early recognition of symptoms and avoiding pre-hospitalization delay. Social determinants such as gender bias, ignorance about signs, and symptoms due to lack of education and socioeconomic incapacity to reach health-care facility within the stipulated golden

hours of the disease condition play a substantial role in the mortality and morbidity of IHD and stroke.

Limitations of the study

An important strength of the study is the sample size which included both IHD and stroke patients thus allowing comparison of health seeking behaviors of the two major life-threatening diseases in a single research. A significant drawback of this study is that it is hospital based and did not include the potential barriers and attitudes of the old and recovered IHD and stroke patients at the community level. A community based multi centric study with larger sample size might help to extrapolate the results.

Recommendations

Further elaborate research is mandatory to assess the availability of health infrastructure, health personnel, logistic, and diagnostic services in our health system in case of emergencies in rural and difficult to reach areas in India. In addition, it is required to improve the awareness levels of optimal health-care seeking among the population regarding the risk factors, early signs and symptoms of IHD and stroke and also take care not to overemphasize symptoms leading to panic attacks about non-cardiac chest pains among the public. The policymakers should reach avenues to improve the health-care seeking behavior by conducting awareness programs through PHCs, media, advertisements, schools, offices or workplaces, etc. Awareness should be made about the symptoms, risk factors, preventive measures, and immediate hospitalization during the precipitation of an attack. Ultimately, through awareness, the seriousness of the disease, due to its irreversible complications, should be established among the public, which will be the major motivating factor for patients to seek healthcare as early as possible.

CONCLUSION

This study depicts significant lack of knowledge and awareness about risk factors, initial symptoms and preventive measures of IHD and stroke. It emphasizes routine ground level evaluation of health programs which are supposed to increase the health-care seeking behavior and utilization of the available health services. The current study also calls for further educational strategies for rural population to highlight importance of earliest medical intervention needed at the initial golden hours of IHD and stroke to reduce the burden of cardiovascular mortality.

ACKNOWLEDGMENT

We would like to acknowledge all the individuals who have extended their help and assistance throughout all aspects of our study.

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<https://doi.org/10.1002/pds.4981>

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Source of Support: Nil, **Conflicts of Interest:** None declared.