



STROKE PREVENTION AWARENESS AND PREVENTIVE BEHAVIORS AMONG PATIENTS WITH METABOLIC SYNDROME: A COMPARATIVE STUDY

Kerith Evanjin J*, Dr. Hema V, Dr. Parameswari

Assistant Professor, Department of Medical Surgical Nursing, GRT College of Nursing, Thiruttani, Tamil Nadu, India.

Corresponding Author

Kerith Evanjin J

Email: keri1995jelin@gmail.com

Article Info

Received: 21/05/2026; Revised: 20/06/2026

Accepted: 02/07/2026

Abstract

Background: Metabolic syndrome significantly increases the risk of stroke due to the coexistence of cardiovascular risk factors such as hypertension, diabetes mellitus, dyslipidaemia, and obesity. Understanding patients' knowledge, attitudes, and preventive practices related to stroke prevention is essential for developing targeted educational interventions. Although several studies have evaluated stroke awareness among general populations and patients with cardiovascular disorders, limited evidence is available comparing stroke prevention-related knowledge, attitudes, and preventive practices among different metabolic syndrome risk groups, particularly in low- and middle-income settings. Understanding variations in awareness among high-risk patient groups may help develop targeted educational interventions and improve stroke prevention strategies. **Aim:** To compare stroke prevention-related knowledge, attitudes, and preventive practices among patients with metabolic syndrome attending a tertiary care teaching hospital. **Methods:** A comparative cross-sectional study was conducted among 100 patients with metabolic syndrome attending the General Medicine Outpatient Department of a tertiary care teaching hospital in South India. Participants were selected using purposive sampling and categorized into two groups: Group I included patients with hypertension, diabetes mellitus, and obesity ($n = 50$), while Group II included patients with hypertension, dyslipidaemia, and obesity ($n = 50$). Data were collected using a structured Knowledge, Attitude, and Practice questionnaire. Descriptive and inferential statistics were analysed using SPSS version 20. **Results:** Among patients with hypertension, diabetes mellitus, and obesity, 48% demonstrated inadequate knowledge, 48% reported unfavourable attitudes, and 54% exhibited good preventive practices regarding stroke prevention. In contrast, patients with hypertension, dyslipidaemia, and obesity demonstrated comparatively better outcomes, with 38% showing adequate knowledge, 52% favourable attitudes, and 58% good preventive practices. A statistically significant positive correlation was observed between knowledge, attitudes, and preventive practices in both groups ($p < 0.01$). Significant associations were observed between attitude and age ($\chi^2 = 19.412$, $p = 0.035$) and educational status ($\chi^2 = 16.853$, $p = 0.032$) among patients with hypertension, diabetes mellitus, and obesity. In patients with hypertension, dyslipidaemia, and obesity, occupation ($\chi^2 = 13.625$, $p = 0.034$) and family income ($\chi^2 = 11.544$, $p = 0.021$) were significantly associated with knowledge levels. **Conclusion:** The findings indicate suboptimal awareness of stroke prevention among patients with metabolic syndrome. Targeted educational interventions focusing on stroke risk factors, warning signs, and lifestyle modification may improve preventive behaviours and early healthcare-seeking practices. Nurses play an essential role in promoting stroke awareness and supporting preventive care among high-risk populations.

Keywords: Stroke prevention; metabolic syndrome; knowledge; attitudes; preventive practices; hypertension; diabetes mellitus; dyslipidaemia.



INTRODUCTION

Stroke is a major global public health concern and one of the leading causes of mortality, long-term disability, and reduced quality of life worldwide. It occurs due to an interruption of cerebral blood circulation resulting in neurological dysfunction. Stroke is broadly classified into ischemic stroke, caused by thrombotic or embolic occlusion, and hemorrhagic stroke, resulting from rupture of cerebral blood vessels. Early recognition and timely management are critical in reducing stroke-related morbidity and mortality.

The World Stroke Organization emphasizes the importance of improving access to stroke care, research, and education to enhance outcomes among individuals affected by stroke.

The “BE-FAST” approach is widely used for early identification of stroke warning signs, including balance disturbances, visual impairment, facial asymmetry, arm weakness, speech difficulty, and the importance of timely medical attention. Prompt recognition and treatment within the therapeutic window significantly improve clinical outcomes.

Metabolic syndrome represents a cluster of interrelated cardiovascular risk factors including hypertension, diabetes mellitus, dyslipidaemia, and obesity, all of which substantially increase the risk of stroke and other vascular complications. Hypertension remains the most significant modifiable risk factor for stroke, while obesity and dyslipidaemia contribute to atherosclerotic changes and endothelial dysfunction. Similarly, diabetes mellitus accelerates vascular damage and increases susceptibility to cerebrovascular disease.

Globally, the prevalence of metabolic syndrome is increasing due to sedentary lifestyle, unhealthy dietary habits, obesity, and ageing populations. Patients with metabolic syndrome are at particularly high risk for stroke because of the coexistence of multiple vascular risk factors. Despite advances in stroke prevention strategies, awareness regarding stroke risk factors, warning signs, and preventive practices remains inadequate, especially in low- and middle-income countries.

Knowledge, attitudes, and preventive practices related to stroke prevention play an essential role in reducing disease burden and improving health outcomes. Understanding patient awareness regarding stroke prevention may help healthcare professionals develop targeted educational interventions and promote lifestyle modifications. Nurses, particularly those working in outpatient and community settings, have a vital role in patient education, risk-factor modification, and promotion of preventive health behaviours.

Therefore, the present study aimed to compare stroke prevention-related knowledge, attitudes, and preventive practices among patients with metabolic syndrome attending a tertiary care teaching hospital.

Objectives of the Study

- To assess and compare stroke prevention-related knowledge, attitudes, and preventive practices among patients with: hypertension, diabetes mellitus, and obesity; and hypertension, dyslipidaemia, and obesity.
- To determine the correlation between knowledge, attitudes, and practices among patients with metabolic syndrome.
- To identify the association between knowledge, attitudes, and preventive practices and selected demographic variables.

MATERIALS AND METHODS

Research Design and Setting

A quantitative comparative cross-sectional study was conducted among patients attending the General Medicine Outpatient Department of a tertiary care teaching hospital in South India.

Participants and Sampling

A total of 100 patients with metabolic syndrome were selected using purposive sampling technique and divided into two groups.

The sample size was determined using power analysis with a 95% confidence level, 80% statistical power, and an expected effect size based on previous studies. The required sample size was estimated to be 100 participants, with 50 participants in each group.

- Group I: Patients with hypertension, diabetes mellitus, and obesity (n = 50)
- Group II: Patients with hypertension, dyslipidaemia, and obesity (n = 50)

Obesity was defined as body mass index (BMI) ≥ 30 kg/m² according to World Health Organization criteria.

Inclusion Criteria

- Patients aged between 35 and 65 years.
- Patients receiving treatment for hypertension, diabetes mellitus, or dyslipidaemia for more than five years.
- Patients with obesity (BMI ≥ 30 kg/m²).

Exclusion Criteria

- Patients with severe comorbid conditions other than metabolic syndrome.
- Critically ill patients.
- Patients with cognitive impairment or disorientation.
- Patients with diagnosed psychiatric illness.

Variables

Demographic Variables

Age, sex, marital status, educational status, occupation, family income, dietary pattern, smoking, alcohol consumption, family history of stroke, and source of health information.



Clinical Variables

Blood pressure, blood glucose level, height, weight, and body mass index.

Data Collection Instrument

Data were collected using a structured questionnaire consisting of:

- Demographic and clinical variables
- Knowledge questionnaire on stroke prevention
- Likert scale for assessing attitudes
- Rating scale for assessing preventive practices

Validity of the Instrument

Content validity of the instrument was established by a panel of five experts from the fields of Nursing and related specialties. Based on their suggestions and recommendations, necessary modifications were made to the data collection tool. The revisions included modification of selected items in the knowledge questionnaire and inclusion of the number of items in the practice rating scale. All expert suggestions were incorporated into the final version of the instrument to ensure its relevance, clarity, and appropriateness.

Reliability of the Instrument

The reliability of the instrument was assessed using appropriate methods for each component of the tool. The reliability of the knowledge questionnaire was established using the test-retest method and yielded a reliability coefficient (r) of 0.88. The attitude scale was assessed using the inter-rater method and demonstrated a reliability coefficient (r) of 0.70. The practice rating scale was evaluated using the split-half method and yielded a reliability coefficient (r) of 0.77. These findings indicate that the instrument possessed acceptable to high reliability and was suitable for data collection.

Data Collection Procedure

Formal administrative permission was obtained from the institutional authorities before data collection. Eligible participants who met the inclusion criteria were recruited after obtaining informed consent. Confidentiality and anonymity were maintained throughout the study.

Anthropometric measurements including height and weight were recorded to calculate BMI. Clinical information regarding dyslipidaemia and medication history was obtained from outpatient consultation records. Data collection was completed within approximately 15 minutes for each participant.

Results:

The table 1 shows that among patients with hypertension, Diabetes mellitus and Obesity, 21(42%) were aged between 35–40 years, 27(54%) were female, 44(88%) were married,

22(44%) were literate, 27(54%) belonged to nuclear family, 18(36%) were privately employed, 34(68%) had family income of Rs.10000 above per month, 35(70%) had no family history of stroke, 39(78%) participants received health information primarily through television, 46(92%) had mixed diet pattern, 35(70%) had not smoked and had no habit of alcohol, 18(36%) had treatment of OHA and 31(62%) had very regular treatment compliance and

it shows that among patients with patients with hypertension, dyslipidemia and Obesity, 18(36%) were aged between 35–40 years, 28(56%) were female, 39(78%) were married, 18(36%) were literate, 26(52%) belonged to nuclear family, 20(40%) were privately employed, 39(60%) had family income of Rs.10000 above per month, 40(80%) had no family history of stroke, 31(62%) had increased information through television, 39(78%) had mixed diet pattern, 36(72%) had not smoked and 38(76%) had no habit of alcohol and 33(66%) had very regular treatment compliance.

This bar chart shows that among patients with hypertension, diabetes mellitus and obesity, 24(48%) had inadequate knowledge, 17(34%) had moderate knowledge and 9(18%) had adequate knowledge regarding stroke prevention and it also shows that among patients with hypertension, dyslipidemia and obesity, 19(38%) had adequate knowledge, 17(34%) had moderate knowledge and 14(28%) had inadequate knowledge regarding stroke prevention.

This chart shows that among patients with hypertension. Diabetes mellitus and obesity 24(48%) had unfavourable attitude, 15(30%) had moderately favourable attitude and 11(22%) had favourable attitude regarding stroke prevention among patients with hypertension, diabetes mellitus and obesity and it also shows that among patients with hypertension. Dyslipidemia and obesity 26(52%) had favourable attitude, 21(42%) had moderately favourable attitude and 3(6%) had unfavourable attitude regarding stroke prevention among patients with hypertension, dyslipidemia and obesity.

This diagram shows that among patients with hypertension. Diabetes mellitus and obesity 27(54%) had good practice, 13(26%) had poor practice and 10(20%) had Moderate practice regarding stroke prevention among patients with hypertension, diabetes mellitus and obesity and shows that among patients with hypertension. Dyslipidemia and obesity 29(58%) had good practice, 15(30%) had moderate practice and 6(12%) had poor practice regarding stroke prevention among patients with hypertension, dyslipidemia and obesity.

There is a moderate positive correlation between the knowledge, attitude and practice which statistically significant at $p \leq 0.001$ and $p < 0.01$ level



in both the groups (Sample A and B). It clearly infers that when knowledge regarding prevention of stroke increases ultimately their attitude and practice towards it also increases.

Among patients with hypertension, diabetes mellitus, and obesity, age ($\chi^2=19.412$, $p=0.035$) and education level ($\chi^2=16.853$, $p=0.032$) were significantly associated with attitude toward stroke prevention, while no demographic variables

were significantly associated with knowledge or practice ($p>0.05$). In patients with hypertension, dyslipidemia, and obesity, occupation ($\chi^2=13.625$, $p=0.034$) and family income ($\chi^2=11.544$, $p=0.021$) were significantly associated with knowledge, and marital status ($\chi^2=6.272$, $p=0.043$) was significantly associated with attitude, whereas demographic variables showed no significant association with practice ($p>0.05$).

Table 1: Demographic characteristics

Demographic Variables	Patients with hypertension, Diabetes mellitus and Obesity		Patients with hypertension, dyslipidemia and Obesity	
	Frequency	Percentage	Frequency	Percentage
Age				
35– 40years	21	42.0	18	36.0
40– 45years	6	12.0	7	14.0
45– 50years	9	18.0	7	14.0
50– 55years	3	6.0	7	14.0
55– 60years	7	14.0	6	12.0
60– 65years	4	8.0	5	10.0
Sex				
Male	23	46.0	22	44.0
Female	27	54.0	28	56.0
Marital status				
Married	44	88.0	39	78.0
Unmarried	6	12.0	11	22.0
Level of education				
Literate	22	44.0	18	36.0
Elementary	6	12.0	14	28.0
Highschool	18	36.0	10	20.0
Graduate	4	8.0	7	14.0
PGandabove	1	2.0	1	2.0
Type of family				
	Frequency	Percentage	Frequency	Percentage
Nuclear	27	54.0	26	52.0
Joint	23	46.0	24	48.0
Occupation				
Private	18	36.0	20	40.0
Government	11	22.0	9	18.0
Business	1	2.0	-	-
Dailywages	11	22.0	11	22.0
None	9	18.0	10	20.0
Family income (per month)				
Rs.1000 – 5000	3	6.0	8	16.0
Rs.5000 – 10000	13	26.0	12	24.0
Rs.10000 above	34	68.0	30	60.0
Family history of stroke				
Yes	15	30.0	10	20.0
No	35	70.0	40	80.0
Source of information				
Television	39	78.0	31	62.0
Radio	2	4.0	1	2.0
Newspaper	1	2.0	2	4.0
Friends	4	8.0	11	22.0
Medical workers	2	4.0	4	4.0



None	2	4.0	1	2.0
Dietary pattern				
Vegetarian	3	4.0	8	16.0
Non-vegetarian	1	2.0	3	6.0
Mixed	46	92.0	39	78.0
	Frequency	Percentage	Frequency	Percentage
Smoking				
Yes	12	24.0	12	24.0
No	35	70.0	36	72.0
Yes-Stopped	1	2.0	1	2.0
Yes-Reduced	2	4.0	1	2.0
Alcohol				
Yes	12	24.0	9	18.0
No	35	70.0	38	76.0
Yes-Stopped	1	2.0	1	2.0
Yes-Reduced	2	4.0	2	4.0
Co-Morbid History				
Treatment for diabetes				
OHA	18	36.0	-	-
Insulin	15	30.0	-	-
Both	17	34.0	-	-
Compliance to treatment				
Very regular	31	62.0	33	66.0
Irregular	19	38.0	17	34.0

Table 2: Knowledge levels comparison.

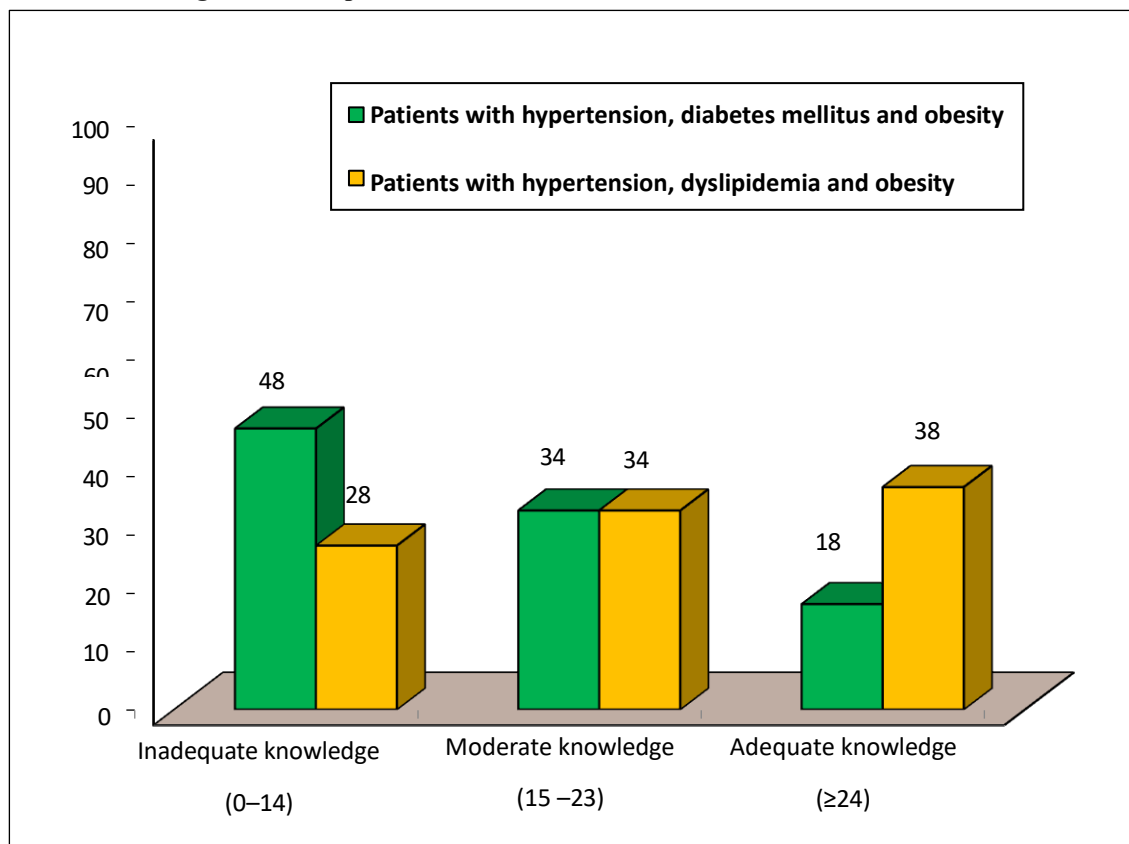


Table 3: Attitude levels comparison

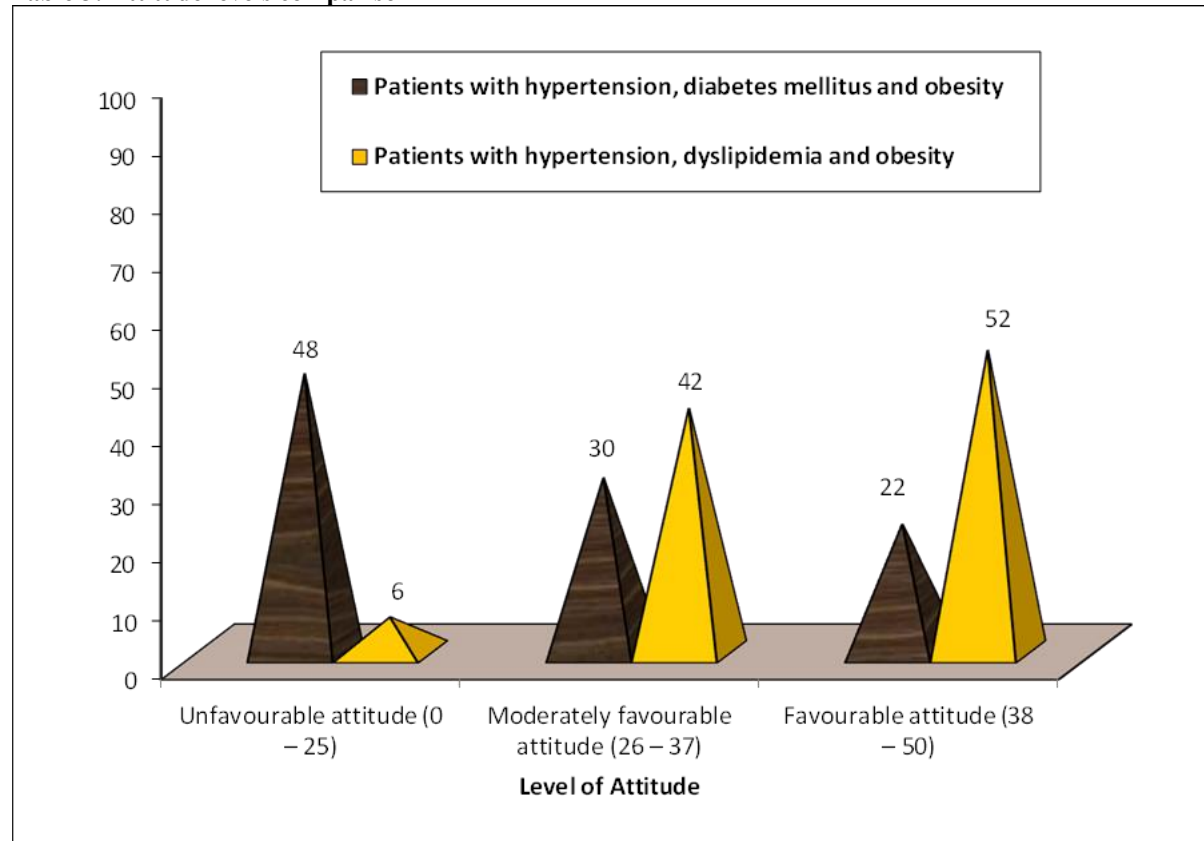


Table 4: Practice levels comparison.

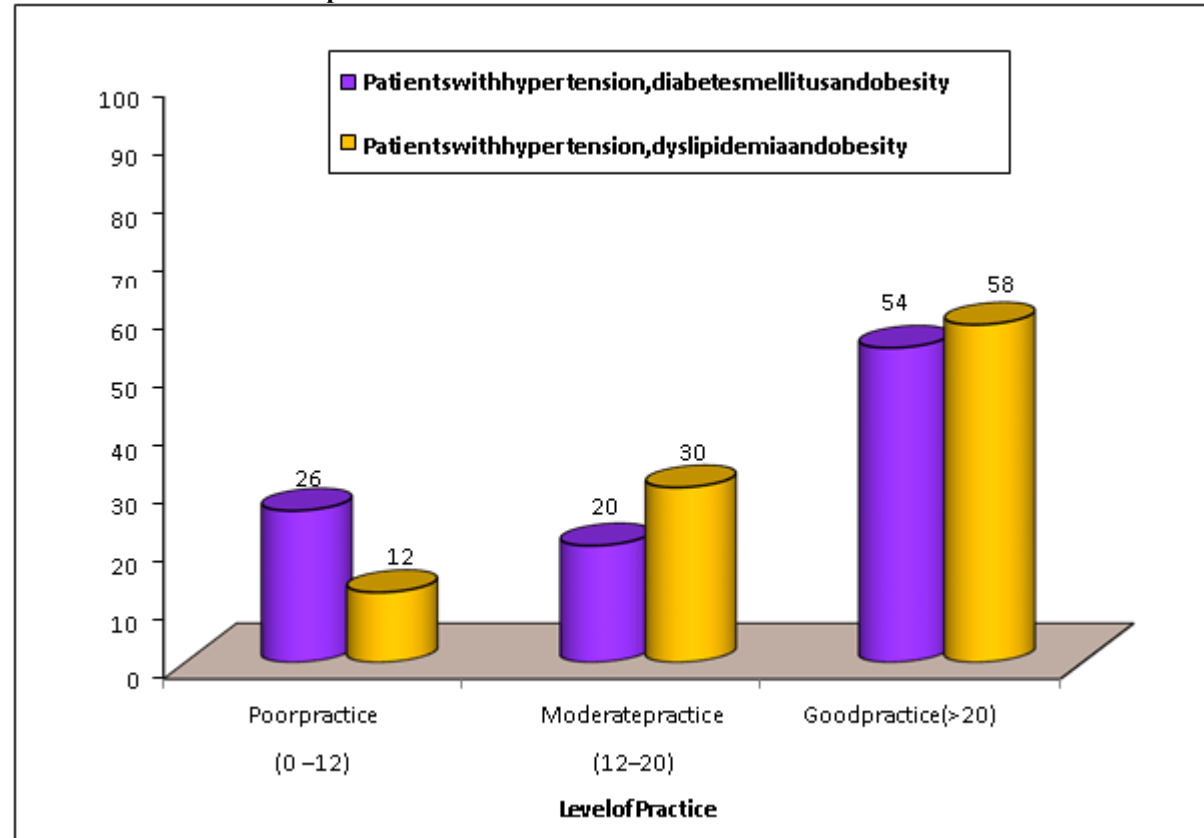
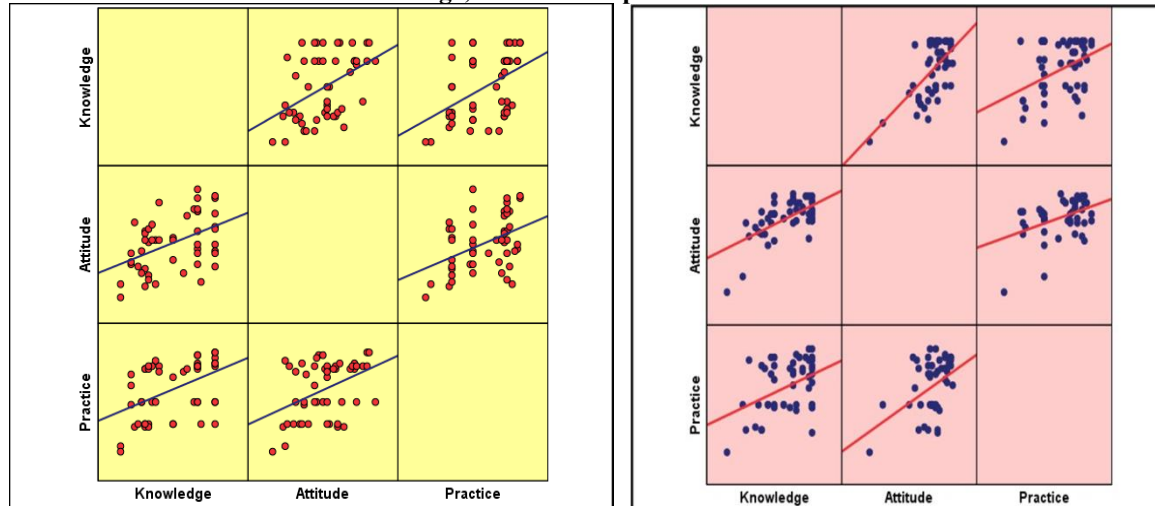


Table 5: Correlation between knowledge, attitude and practice**Table 8: Association level of knowledge, attitude and practice regarding stroke prevention among patients with hypertension, diabetes mellitus and obesity with selected demographic variables.**

Demographic Variable	Knowledge χ^2 (df), p-value	Attitude χ^2 (df), p-value	Practice χ^2 (df), p-value
Age (35–40, 40–45, 45–50, 50–55 years)	$\chi^2 = 16.673$ (df=10), p = 0.082 (NS)	$\chi^2 = 19.412$ (df=10), p = 0.035* (S)	$\chi^2 = 11.666$ (df=10), p = 0.308 (NS)
Type of Family (Nuclear, Joint)	$\chi^2 = 1.385$ (df=2), p = 0.500 (NS)	$\chi^2 = 1.615$ (df=2), p = 0.446 (NS)	$\chi^2 = 1.403$ (df=2), p = 0.496 (NS)
Occupation (Private, Government, Business, Daily Wages, None)	$\chi^2 = 6.306$ (df=8), p = 0.613 (NS)	$\chi^2 = 6.107$ (df=8), p = 0.635 (NS)	$\chi^2 = 11.556$ (df=8), p = 0.172 (NS)
Family Income per Month (₹1,000–5,000; ₹5,001–10,000; >₹10,000)	$\chi^2 = 9.865$ (df=4), p = 0.043* (S)	$\chi^2 = 8.165$ (df=4), p = 0.086 (NS)	$\chi^2 = 4.083$ (df=4), p = 0.395 (NS)
Family History of Stroke (Yes, No)	$\chi^2 = 2.175$ (df=2), p = 0.337 (NS)	$\chi^2 = 1.396$ (df=2), p = 0.498 (NS)	$\chi^2 = 2.415$ (df=3), p = 0.299 (NS)
Source of Information (Television, Radio, Newspaper, Friends)	$\chi^2 = 7.300$ (df=10), p = 0.697 (NS)	$\chi^2 = 11.561$ (df=10), p = 0.316 (NS)	$\chi^2 = 10.506$ (df=10), p = 0.397 (NS)
Smoking (Yes, No)	$\chi^2 = —$ (df=6), p = 0.288 (NS)	$\chi^2 = —$ (df=6), p = 0.403 (NS)	$\chi^2 = —$ (df=6), p = 0.143 (NS)

χ^2 = Chi-square value; df = Degrees of freedom; *p < 0.05 = Significant (S); NS = Not Significant,

DISCUSSION

The present study evaluated stroke prevention-related knowledge, attitudes, and preventive practices among patients with metabolic syndrome attending a tertiary care teaching hospital. The findings demonstrated variations in awareness and preventive behaviours between patients with hypertension, diabetes mellitus, and obesity and those with hypertension, dyslipidaemia, and obesity.

In the present study, most participants in both groups were female, married, and belonged to nuclear families. Television was identified as the primary source of health information among

participants, highlighting the potential role of mass media in stroke awareness programmes. A high proportion of participants reported mixed dietary patterns, while most denied smoking and alcohol consumption.

The findings revealed that patients with hypertension, diabetes mellitus, and obesity demonstrated comparatively lower levels of stroke prevention-related knowledge and less favourable attitudes than patients with hypertension, dyslipidaemia, and obesity. Nearly half of the participants in the former group exhibited inadequate knowledge and unfavourable attitudes toward stroke prevention. In contrast, patients with



hypertension, dyslipidaemia, and obesity demonstrated relatively better awareness and more favourable attitudes regarding stroke prevention. With regard to preventive practices, both groups demonstrated moderate to good levels of practice; however, practice scores did not consistently correspond with knowledge levels. This finding suggests that certain preventive behaviours may be influenced by routine clinical follow-up, medication adherence, or physician counselling rather than knowledge alone.

The observed relationship between knowledge, attitudes, and preventive practices emphasizes the importance of patient education in stroke prevention. Inadequate awareness regarding stroke warning signs, risk factors, and timely intervention may contribute to delayed healthcare-seeking behaviour and poorer outcomes among high-risk populations.

The study findings underscore the critical role of nurses and healthcare professionals in improving stroke awareness among patients with metabolic syndrome. Structured educational interventions focusing on risk-factor modification, healthy lifestyle practices, medication adherence, and recognition of early warning signs may contribute to reducing stroke-related morbidity and mortality.

Limitations

This study has certain limitations. The study was conducted in a single tertiary care hospital with a relatively small sample size using purposive sampling, which may limit generalizability of findings. Self-reported responses may also introduce reporting bias. Future multicenter studies with larger sample sizes are recommended.

CONCLUSION

The present study concludes that patients with metabolic syndrome demonstrated varying levels of knowledge, attitudes, and preventive practices regarding stroke prevention. Patients with hypertension, dyslipidaemia, and obesity exhibited comparatively better awareness and more

favourable attitudes than patients with hypertension, diabetes mellitus, and obesity. Despite moderate levels of preventive practices observed among participants, overall awareness regarding stroke prevention remained suboptimal. These findings highlight the need for targeted educational interventions to improve understanding of stroke risk factors, warning signs, early treatment, and lifestyle modification among high-risk populations.

Healthcare professionals, particularly nurses working in outpatient settings, play a vital role in promoting stroke awareness, encouraging preventive health behaviours, and facilitating early recognition and timely management of stroke symptoms. Strengthening patient-centred health education programmes may contribute to improved stroke prevention outcomes among individuals with metabolic syndrome.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Ethical approval was obtained from the Institutional Ethics Committee of Dr. M.G.R. Educational and Research Institute prior to data collection. Written informed consent was obtained from all participants.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Acknowledgement

I sincerely thank Dr. MGR Educational and Research Institute for their support in conducting this research. I am especially grateful to Tamil Nadu Science and Technology for recognizing this study under the Student Project Scheme (Project Code: MS-0123) and providing funding for the project. My heartfelt appreciation goes to all the participants and my family for their unwavering support throughout this study.

REFERENCES

1. Adusumilli, D., & Syed, S. (2018). Community stroke awareness: Knowledge, attitude, and health-seeking behavior of adults in an urban slum of Hyderabad, India. *International Journal of Medical Science and Public Health*, 7(11), 848–854.
2. Akinyemi, R. O., Sarfo, F. S., Akinyemi, J., Singh, A., Onoja Akpa, M., Akpalu, A., et al. (2019). Knowledge, attitudes and practices of West Africans on genetic studies of stroke: Evidence from the SIREN study. *International Journal of Stroke*, 14(1), 69–79.
3. Calderaro, M., Salles, I. C., Gouvêa, G. B., Monteiro, V. S., Mansur, A. P., Shinohara, H. N. I., et al. (2022). The lack of knowledge on acute stroke in Brazil: A cross-sectional study with children, adolescents, and adults from public schools. *Clinics*, 77, Article 100142.



4. DeBoer, M. D., Filipp, S. L., & Gurka, M. J. (2018). Use of a metabolic syndrome severity Z score to track risk during treatment of prediabetes: An analysis of the Diabetes Prevention Program. *Diabetes Care*, 41(11), 2421–2430.
5. Donkor, E. S. (2018). Stroke in the 21st century: A snapshot of the burden, epidemiology, and quality of life. *Stroke Research and Treatment*, 2018, Article 3238165.
6. Echouffo-Tcheugui, J. B., Xu, H., Matsouaka, R. A., Xian, Y., Schwamm, L. H., Smith, E. E., et al. (2018). Diabetes and long-term outcomes of ischaemic stroke: Findings from Get With The Guidelines–Stroke. *European Heart Journal*, 39(25), 2376–2386.
7. Faiz, K. W., Labberton, A. S., Thommessen, B., Rønning, O. M., & Barra, M. (2019). Stroke-related knowledge and lifestyle behavior among stroke survivors. *Journal of Stroke and Cerebrovascular Diseases*, 28(11), Article 104359.
8. Hinkle, J. L., Cheever, K. H., & Overbaugh, K. (2022). *Brunner & Suddarth's textbook of medical-surgical nursing* (15th ed.). Lippincott Williams & Wilkins.
9. Kalkonde, Y., Deshmukh, S., Gokhale, C., Jacob, M., & Bang, A. (2020). Stroke happens suddenly so it cannot be prevented: A qualitative study to understand knowledge, attitudes, and practices about stroke in rural Gadchiroli, Maharashtra, India. *Journal of Neurosciences in Rural Practice*, 11(1), 53–62.
10. Kuo, S., Yang, C. T., Herman, W. H., Lisabeth, L. D., & Ye, W. (2022). National trends in the achievement of recommended strategies for stroke prevention in U.S. adults with type 2 diabetes, 2001–2018. *Diabetes Care*, 45(9), 2003–2011.
11. Kusuma, P. J., Djuari, L., Machin, A., & Fauzi, A. A. (2021). Knowledge, attitude and practice of primary care physicians in dealing with acute stroke in Indonesia. *Journal of Health Science and Medical Research*, 39(2), 115–123.
12. Lewis, S. L., Bucher, L., Heitkemper, M. M., Harding, M. M., Kwong, J., & Roberts, D. (2016). *Medical-surgical nursing: Assessment and management of clinical problems*. Mosby.
13. Li, Z., Hu, L., Rong, X., Luo, J., Xu, X., & Zhao, Y. (2022). Role of no table salt on hypertension and stroke based on large sample size from National Health and Nutrition Examination Survey database. *BMC Public Health*, 22(1), 1462.
14. Wang, Z., Yang, T., & Fu, H. (2021). Prevalence of diabetes and hypertension and their interaction effects on cardio-cerebrovascular diseases: A cross-sectional study. *BMC Public Health*, 21(1), 1224.
15. Woldetsadik, F. K., Kassa, T., Bilchut, W. H., Kibret, A. K., Guadie, Y. G., & Eriku, G. A. (2022). Stroke-related knowledge, prevention practices and associated factors among hypertensive patients at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2021. *Frontiers in Neurology*, 13, 849212.

