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A Study To Assess The Effectiveness Of Educational Intervention Program On Knowledge Regarding Hypertension Stroke Alert (HSA) Among Hypertensive Patients Attending OPD's Of A Selected Tertiary Care Hospital Of Western Maharashtra.

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ABSTRACT

Back ground

Stroke is a major cause of death with hypertension being identified as an important modifiable risk factor. Prompt identification of stroke symptoms and timely management is noted to be significant in lowering both morbidity and mortality. This study assessed the level of knowledge among hypertensive patients about stroke alert symptoms.

Methods

A Pre Experimental study was conducted among 90 hypertensive patients attending in a cardiac OPD of a tertiary care hospital. Participants were selected by using Simple random sampling. Data were collected using self structured questionnaire .Descriptive statistics and inferential statistics for data analysis

Result

Most of the participants had average knowledge (97.8%) regarding hypertensive stroke alert symptoms, after educational intervention participants knowledge has been improved from average to good (83.3%).A paired T –test showed difference was statistically significant (p value <0.001) meaning the educational programme was very effective.

Conclusion

This study was done to check how well an educational program could improve knowledge about Hypertension Stroke Alert (HSA) among people with high blood pressure. This study findings underline the importance of regular health education among people for early recognition of stroke and timely medical intervention, there by potentially reducing potential morbidity and mortality.

Keywords

Hypertension, Stroke, Alert symptoms, OPD, Knowledge, Educational interventional program.

Introduction

Hypertension is a silent yet critical risk factor for stroke, often going undetected until severe complications arise. Stroke remains a leading cause of mortality and disability globally, particularly in hypertensive populations. Early recognition of warning signs is essential to reduce morbidity and mortality. However, a lack of awareness among hypertensive patients contributes to delayed treatment. This study aimed to assess the effectiveness of an educational intervention program on improving knowledge regarding Hypertension Stroke Alert (HSA) among hypertensive patients.

Background

Stroke as a cause of long-term disability is a growing public health burden. Therefore, focusing on prevention is important. The most prominent aim of this strategy is to treat modifiable risk factors, such as arterial hypertension, the leading modifiable contributor to stroke. Thus, efforts to adequately reduce Blood Pressure (BP) among hypertensive are mandatory.

Despite advances in treatment, stroke outcomes heavily depend on the speed of recognition and intervention. Therefore, awareness of early warning signs or "alert symptoms" of stroke—especially in high-risk populations such as hypertensive patients—is vital

Aim

To identify the effectiveness of educational interventional program on improving knowledge regarding hypertension stroke alert among hypertensive patients

Objectives

1. To assess the pre-test & post-test knowledge scores regarding Hypertensive Stroke Alert (HSA) among hypertensive patients attending cardiac OPD of selected Tertiary care hospital of Western Maharashtra.

2. To assess the effectiveness of Educational Intervention program on Hypertension Stroke Alert among Hypertensive patients.

3. To associate the pre-test scores with selected demographic variables.

Operational definitions

- **Educational intervention program**: In this study Educational intervention program refers to Structured teaching program to enhance knowledge among hypertensive patients regarding stroke risk factors, warning signs, and prevention strategies. It includes verbal education, printed materials, and interactive discussions led by nurses in an OPD setting.

- **Hypertension Stroke Alert (HSA):**In this study Hypertension Stroke Alert Nursing (HSA) is about stroke warning signs, risk factors, prevention strategies, and immediate actions to be taken in case of a hypertensive stroke, assessed using a validated knowledge questionnaire.

- **Effectiveness:** In this study, effectiveness refers to the measurable improvement in knowledge regarding Hypertension Stroke Alert among hypertensive patients.

- **Knowledge**: In this study Knowledge refers theawareness and understanding of hypertensive patients about stroke, including risk factors, warning signs, and preventive measures. It is measured using a structured questionnaire before and after the intervention.

- **Hypertensive Patients**:In this study Hypertensive patient refers to the Individuals who have been medically diagnosed with hypertension of 6 month duration with regular medication and attending the outpatient department (OPD) for consultation and follow-up care in a selected tertiary care hospital.

Study design

Pre Experimental Design was employed to assess the effectiveness of educational interventional program of hypertension stroke alert symptoms among hypertensive patients

Setting

Study was conducted in Cardiac OPD of a selected tertiary care hospital in Pune Western Maharashtra, catering to a large population of patients with hypertension.

Study population

Target population of the study included Hypertensive patients attending Cardiac OPD of the selected hospital.

Sample, sample technique and sample size

Sample

Study sample include hypertensive patient attending cardiac opd

Sample technique

Purposive sampling technique was used to select eligible patients who met inclusion criteria

Sample size

Based on the previous literature and feasibility a sample size of ninety patients were chosen for the study.

Sample criteria

Inclusion criteria

- Patients diagnosed with hypertension
- Patients attending OPD during the data collection period.
- Patients willing to participate in the study.

Exclusion criteria

- Patients with cognitive impairment or communication difficulties.
- Patients unwilling to participate.

Tool preparation and description

Tool used for data collection

The tool used for study was self structured questionnaire consisting of two section

1.Section A-Socio demographic profile of patients(age,gender,education level,life style habit,dietary habits,pattern of exercise,family history of stroke,duration of hypertension and current medication status,other disease .

2**.Section** B- self structured tool to assess the knowledge on hypertension stroke alert (HSA).it consists of 20 questions.

Scoring

15-20=Good

6-14=Average

0-5=Poor

Tool Preparation and Validation

- The tool was prepared based on an extensive **literature review**.
- Content validation was done by a panel of **experts**
- Necessary **language translation and back-translation** were done (English ⇄ Marathi ⇄ Hindi) to ensure accuracy.
- A **pilot study** was conducted on 10% of the sample to test clarity, reliability, and feasibility, and the results were included only after refinement.

Data Collection Technique

- Data were collected using **face-to-face interviews** in the Cardiac OPD to ensure confidentiality and comfort.
- Each session took **approximately 10–15 minutes** per Patient
- Verbal informed consent was obtained before participation.
- Ethical considerations such as confidentiality, voluntary participation, and the right to withdraw at any time were strictly adhered to.

Feasibility of the Study

The study was found to be **feasible** based on the following factors:

- The hospital had a **sufficient patient load**
- **Cooperation from hospital staff** and patients facilitated smooth data collection.
- Patients were **willing to participate** and appreciated the opportunity to share their views.
- The tools used were **simple, culturally adapted**, and did not cause emotional distress to participants.
- The pilot study confirmed the **practicality and reliability** of the tool, ensuring full-scale data collection was achievable.

Data Analysis

The data were analyzed using SPSS version 18. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the data. Chi-square tests were performed to determine associations between knowledge and selected demographic and clinical variables. The paired t-test is used to compare the pre test post test scores of knowledge, A p-value less than 0.001 was considered statistically significant.

Analysis and interpretation was done in accordance with the objectives laid down for the study. The purpose of analysis is to reduce the data into an interpretable and meaningful form so that the result can be compared and significance can be identified.

This chapter deals with the analysis and interpretation of data collected. The data was analyzed by calculating the score in terms of frequency, percentage , mean, standard deviation, chi- square, and paired T- test.

OBJECTIVES OF THE STUDY

1) To assess the pre-test & post-test knowledge scores regarding Hypertensive Stroke Alert (HSA) among hypertensive patients attending cardiac OPD of selected tertiary care hospital of Western Maharashtra.
2) To assess the effectiveness of Educational Intervention program on Hypertension Stroke Alert among Hypertensive patients.
3) To associate the pre-test knowledge scores with selected demographic variables

PLAN OF ANALYSIS

Analysis and interpretation of data was done according to the objectives using descriptive and inferential statistics. The level of significance chosen was at $p \leq 0.05$.

The analysed data was organized according to the objectives and presented under the following sections:

Section	Description
Section A	Demographic Profile
Section B	Pre-test & Post-test Knowledge Scores
Section C	Effectiveness of intervention

SECTION-A
Description of Demographic Profile

This section describes the demographic characteristics of the sample under study.

TABLE 4.1: DEMOGRAPHIC PROFILE OF THE SUBJECTS

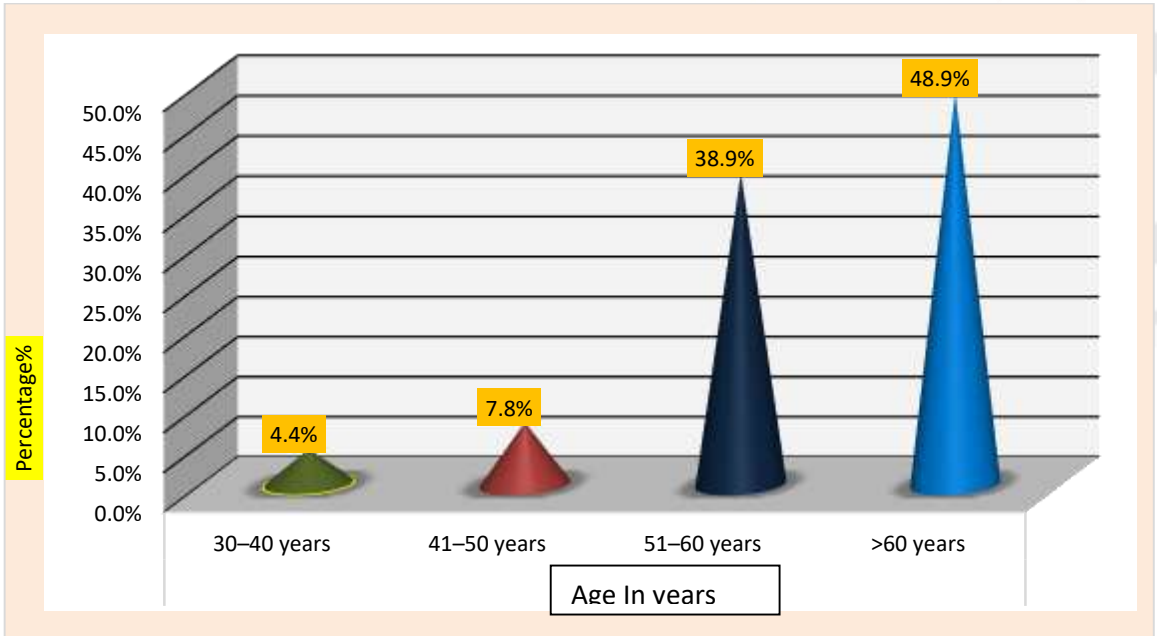
n=90

Variables	Characteristics	Percentage (%)	Frequency (f)
Age in Years	30–40 years	4.4%	4
	41–50 years	7.8%	7
	51–60 years	38.9%	35
	>60 years	48.9%	44
Gender	Male	71.1%	64
	Female	28.9%	26
	Other	0.0%	0
Education Level	No formal education	20.0%	18
	Primary	55.6%	50
	Secondary	17.8%	16
	Higher education	6.7%	6
Life Style habits	Smoking	23.3%	21
	Alcoholism	16.7%	15
	None	53.3%	48
	Both	6.7%	6
Dietary habits	veg	33.3%	30
	Non veg	66.7%	60
Pattern of Exercise	Daily	47.8%	43
	Characteristics	**Percentage (%)**	**Frequency (f)**
	Alternate days	10.0%	

			9
	weekly once	27.8%	25
	Not at all	14.4%	13
Family history of stroke	Yes	18.9%	17
	No	81.1%	73
Duration of hypertension and current medication status	<1 year, on regular medication	22.2%	20
	1–10 years, on regular	33.3%	30
	1–10 years, not on regular medication	18.9%	17
	>10 years, on regular medication	25.6%	23
	>10 years, not on regular medication	0.0%	0
Other Diseases	Diabetes	23.3%	21
	Heart disease	33.3%	30
	Both	23.3%	21
	No	20.0%	18

Figure No.4.1: Diagram showing the percentage distribution according to their Age in years.

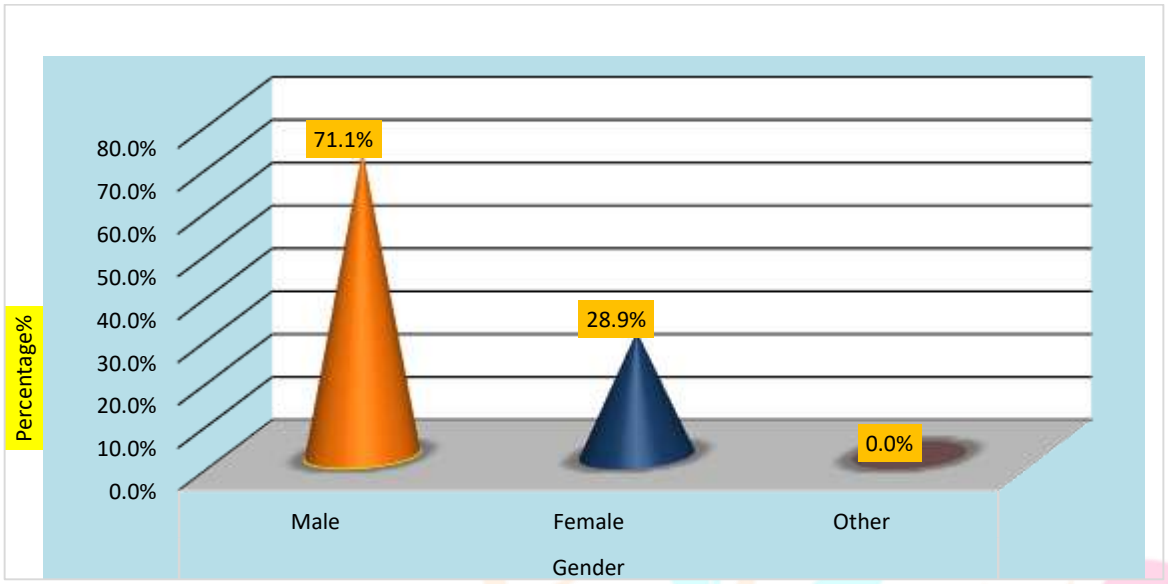
n=90



Nearly half of the participants were above 60 years (48.9%), followed by 51 –60 years (38.9%), with fewer in the 41–50 (7.8%) and 30–40 (4.4%) age group.

Figure No.4.2: Diagram showing the percentage distribution according to their Gender

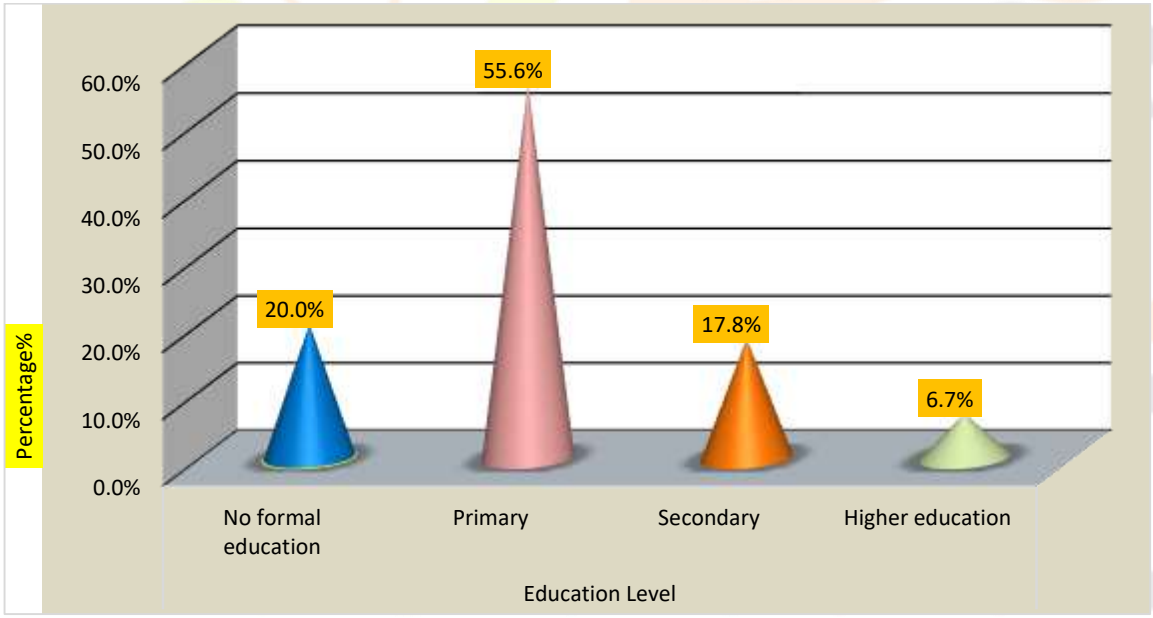
n=90



The majority were male (71.1%), with females accounting for 28.9%. No participants identified as "other."

Figure No.4.3: Diagram showing the percentage distribution according to their Education Level

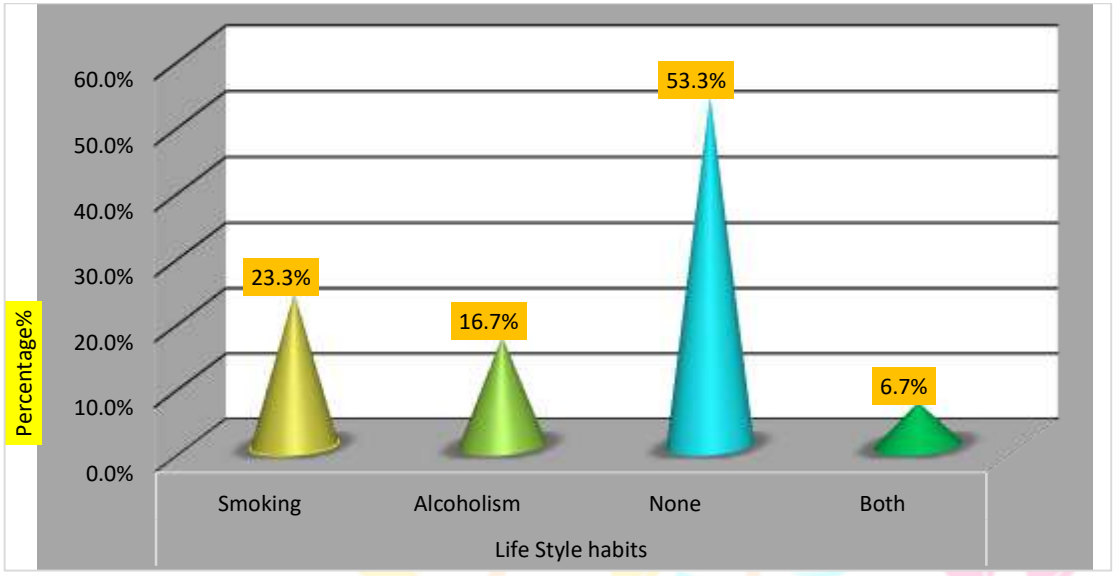
n=90



Most participants had primary education (55.6%), followed by secondary (17.8%), and only 6.7% had higher education and 20% has formal education.

Figure No.4.4: Diagram showing the percentage distribution according to their Life style habit.

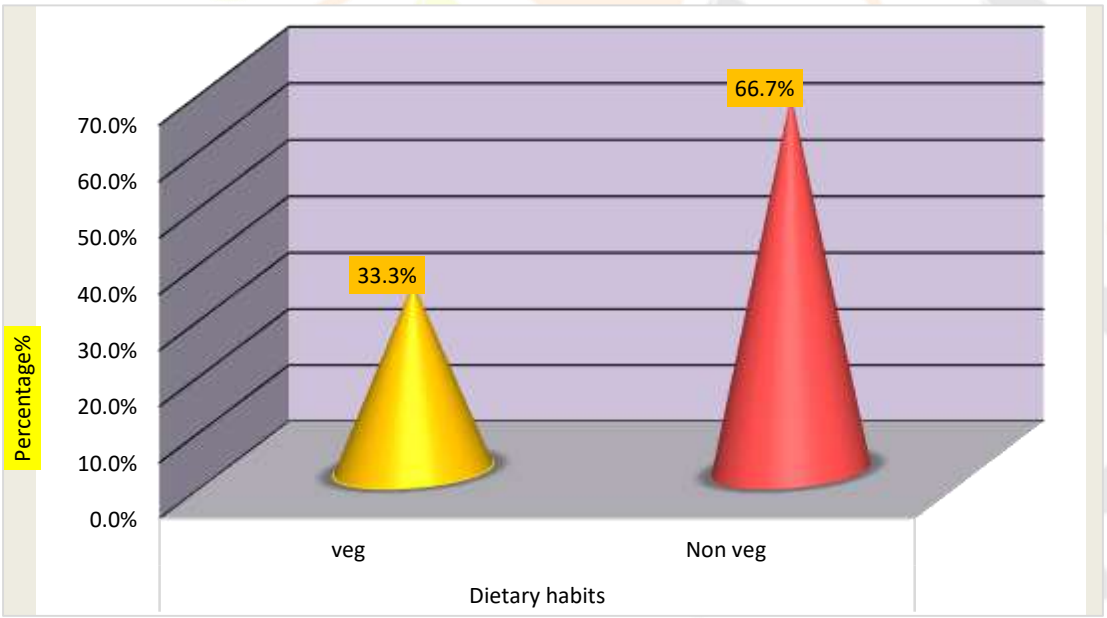
n=90



Most participants had primary education (55.6%), followed by no formal education (20%), secondary (17.8%), and only 6.7% had higher education

Figure No.4.5: Diagram showing the percentage distribution according to their Dietary habits.

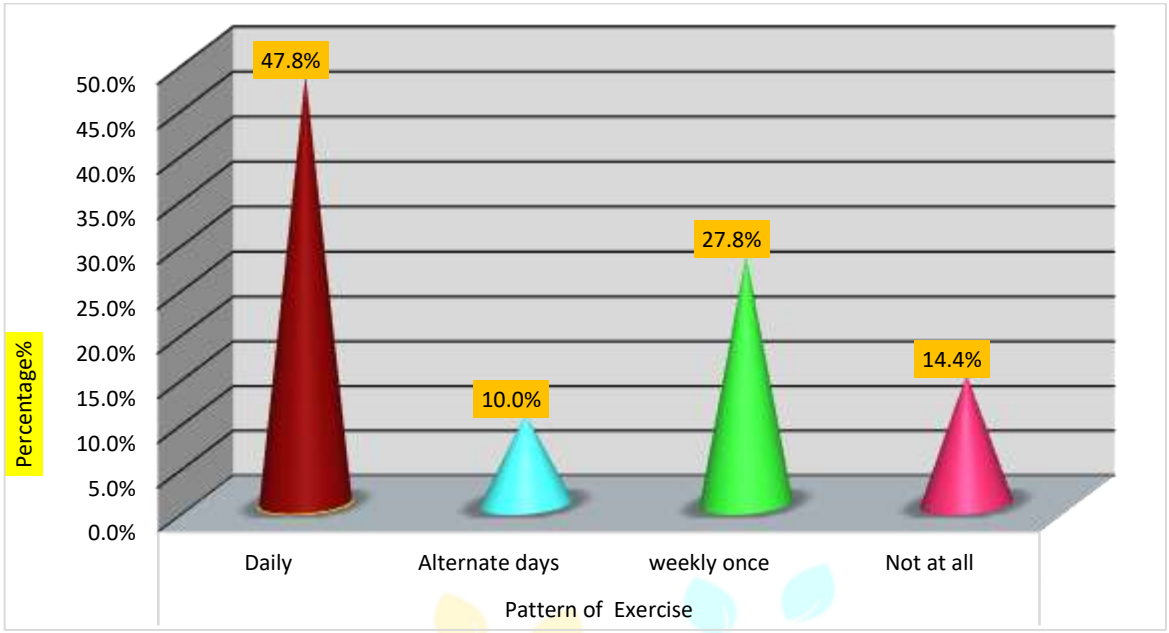
n=90



A majority of participants were non-vegetarian (66.7%), while 33.3% were vegetarian

Figure No.4.6: Diagram showing the percentage distribution according to their Pattern of Exercise.

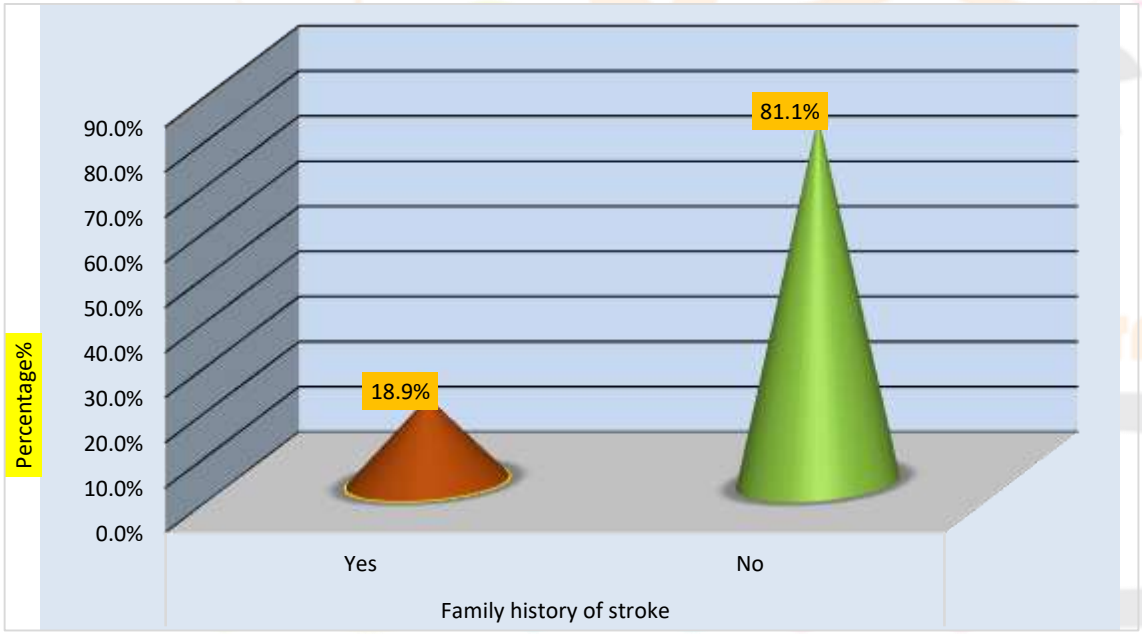
n=90



Daily exercise was practiced by 47.8%, followed by weekly once (27.8%), not at all (14.4%), and alternate days (10%)

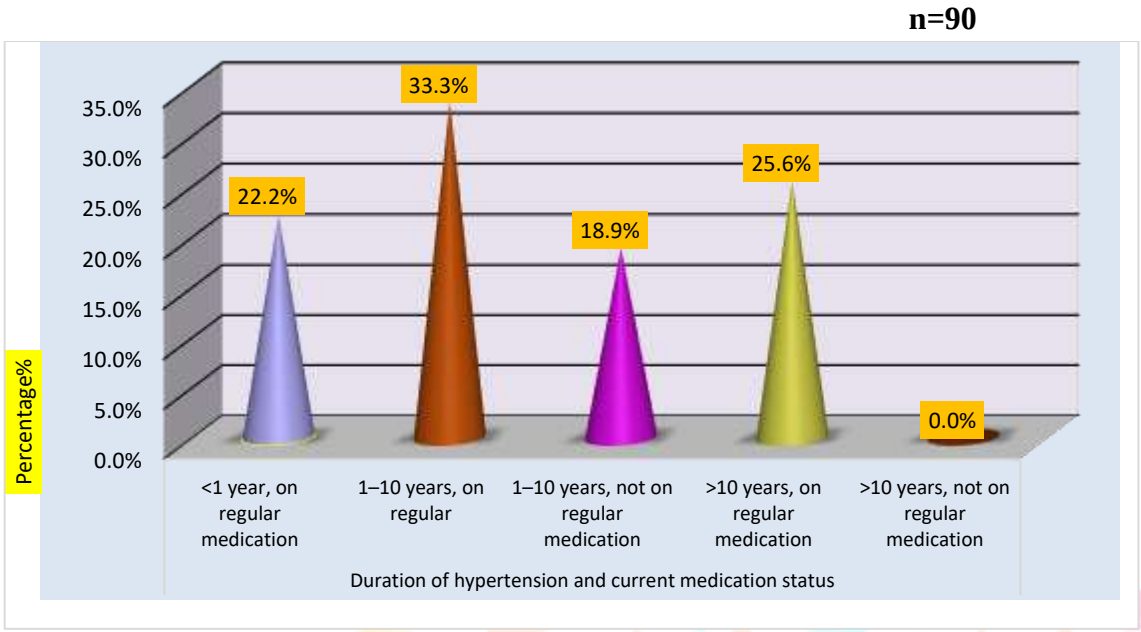
Figure No.4.7: Diagram showing the percentage distribution according to their Family history of stroke.

n=90



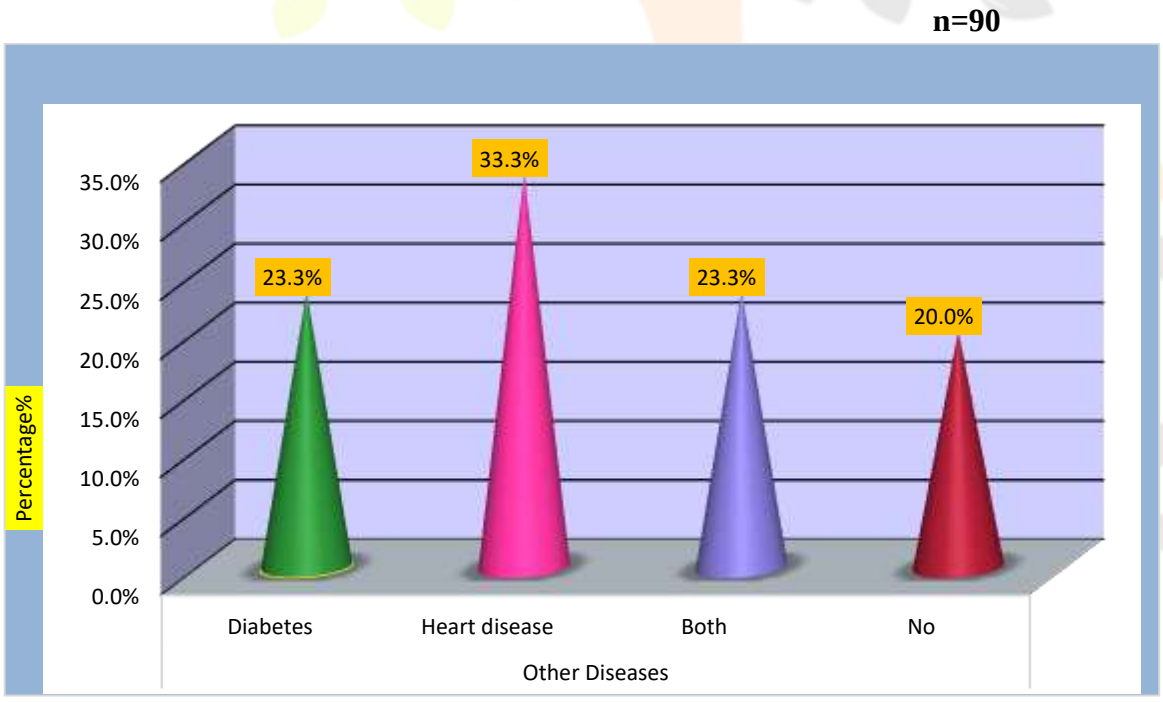
81.1% had no family history, while 18.9% reported having one.

Figure No.4.8: Diagram showing the percentage distribution according to their Duration of hypertension and current medication status



33.3% had hypertension for 1–10 years with regular medication, followed by >10 years on regular meds (25.6%), <1 year on meds (22.2%), and 1–10 years without regular meds (18.9%). No participants were in the >10 years without medication group.

Figure No.4.9: Diagram showing the percentage distribution according to their Other Diseases.



Heart disease (33.3%) was most common, followed by diabetes (23.3%), both conditions (23.3%), and no disease (20%).

SECTION – B

Table 4.2–: Table showing pre-test level of knowledge

n=90

Criteria	Frequency (f)	Percentage (%)
Poor Knowledge	**0**	**0%**
Moderate Knowledge	**88**	**97.8%**
Good Knowledge	**2**	**2.2%**

Maximum Score=20 Minimum Score =0

Before the intervention, **97.8%** of participants had **moderate knowledge** (scores= 6–15), and only **2.2%** demonstrated **good knowledge** (scores =16–20). **No participants** were in the **poor knowledge** category (0–5).

Figure no 4.10: Diagram showing the percentage distribution of pre-test knowledge

n=90

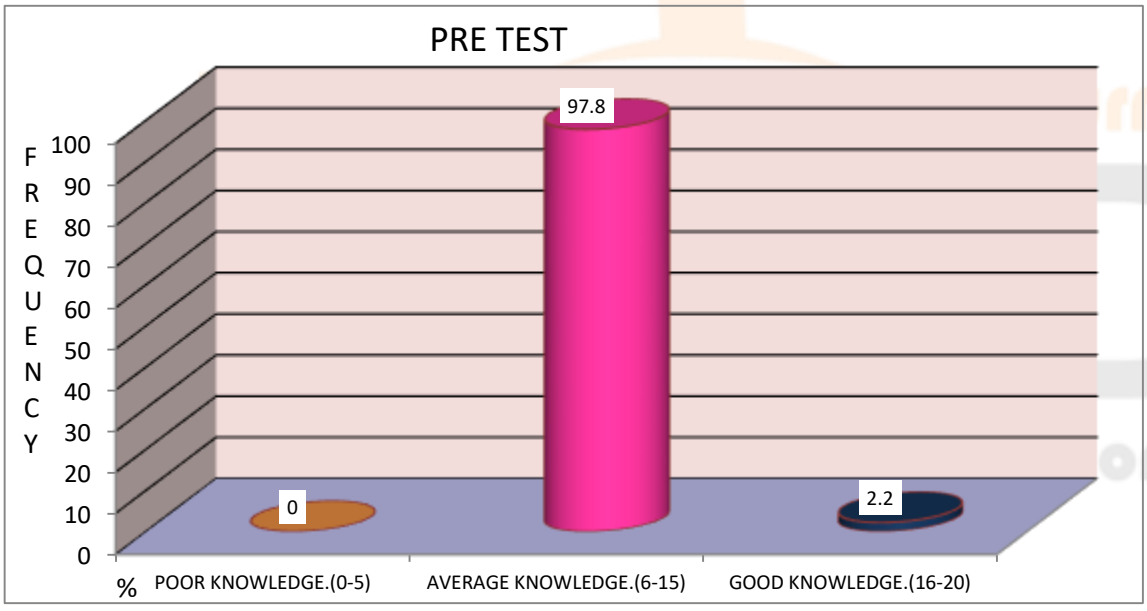


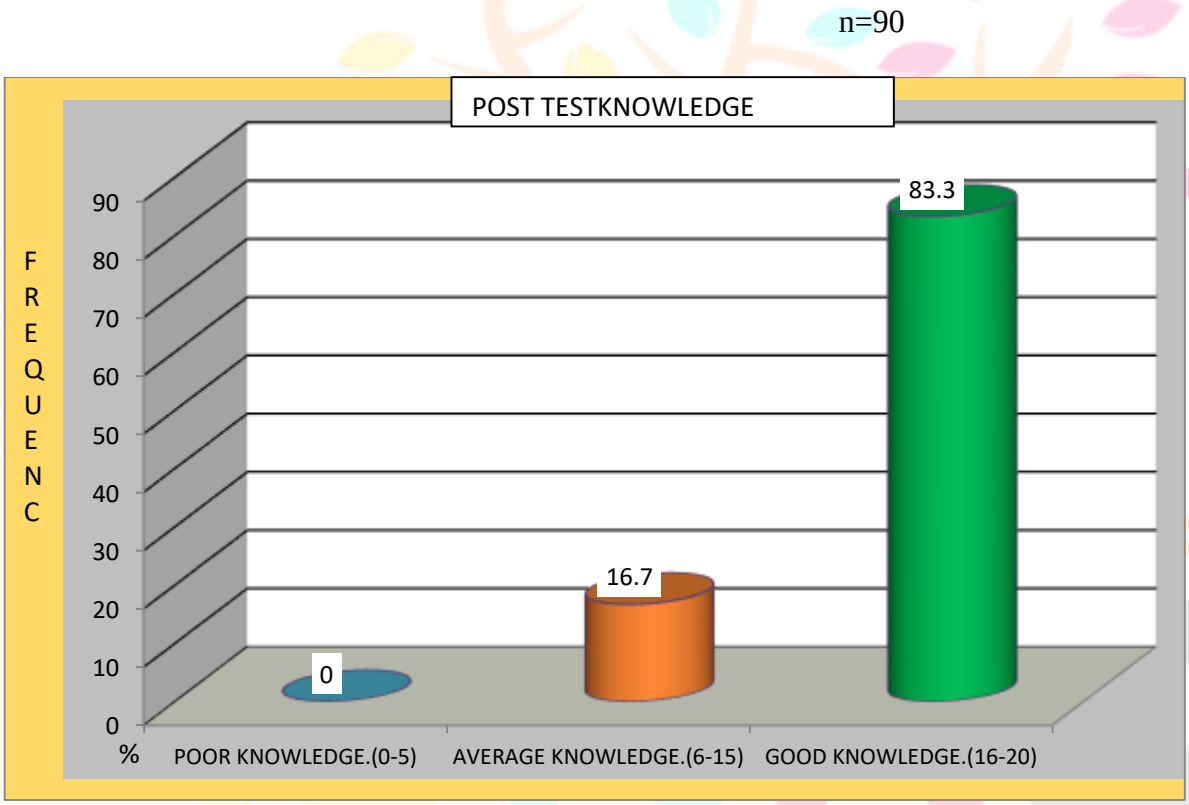
Table 4.3–: Table showing post-test level of knowledge

Criteria	Frequency(f)	Percentage(%)
Poor Knowledge	**0**	**0%**
Moderate Knowledge	**15**	**16.7%**
Good Knowledge	**75**	**83.3%**

Maximum Score=20 Minimum Score =0

After the intervention, **83.3%** of participants achieved **good knowledge** (scores 16–20), while **16.7%** had **average knowledge** (scores 6–15). **None** of the participants fell into the **poor knowledge** category (0–5).

Figure no.4.11: Bar Diagram representing post-test level of knowledge



SECTION – C

Table 4.4– : Effectiveness of intervention

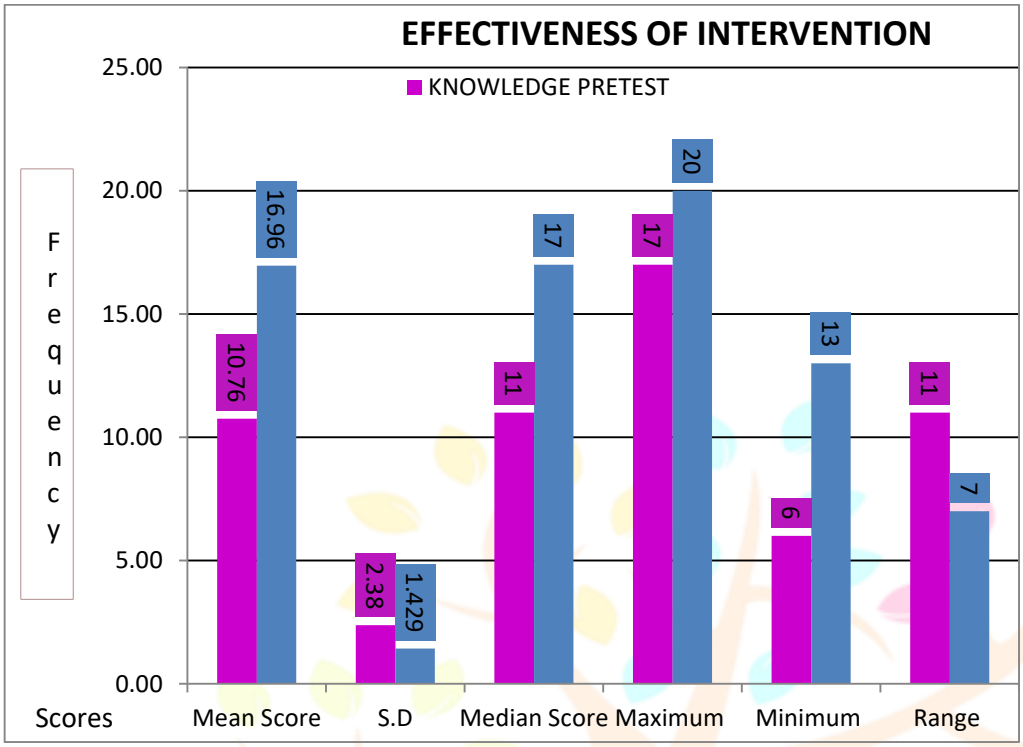
n-90

Criteria	Mean±S.D.	Mean(%)	Range	Mean difference	Paired t test	P value	Table value
Pre test knowledge	10.76±2.381	53.80	6-17	6.2	28.08 *Sig	<0.001	1.99
Post test knowledge	16.96±1.429	84.80	13-20	0			

**Significant level 0.05 Maximum = 20 Minimum = 0

Figure no. 4.12: Bar diagram representing effectiveness of intervention

n=90



The **mean pre-test knowledge score** was **10.76 ± 2.381 (53.80%)**, while the **post-test mean** increased to **16.96 ± 1.429 (84.80%)**, with a **mean difference of 6.20 points**. The **Paired T-Test value was 28.084**, which is **highly significant** ($p < 0.001$), exceeding the table value of **1.99** at the 0.05 level.

The mean post-test knowledge score regarding Hypertension Stroke Alert (HSA) among hypertensive patients who receive the Educational Intervention Program was significantly higher than their mean pre-test knowledge score. Thus the Hypertensive Stroke Alert is very effective.

SECTION – D

Table 4.5 : Association of pre-test knowledge scores selected demographic variables

n=90

Association of pre-test knowledge scores selected demographic variables							
Variables	**Opts**	**GOOD KNOWLEDGE**	**AVERAGE KNOWLEDGE**	**POOR KNOWLEDGE**	**Chi Test**	**P Value**	**Result**
Age	30–40 years	0	4	0	0.315	0.957	Not Significant
	41–50 years	0	7	0			
	51–60 years	1	34	0			
	>60 years	1	43	0			
Gender	Male	2	62	0	0.831	0.362	Not Significant
	Female	0	26	0			
	Other	0	0	0			
Education Level	No formal education	0	18	0	1.636	0.651	Not Significant
	Primary	2	48	0			
	Secondary	0	16	0			
	Higher education	0	6	0			
Life Style habits	Smoking	1	20	0	3.214	0.360	Not Significant
	Alcoholism	1	14	0			
	None	0	48	0			
	Both	0	6	0			
Dietary habits	veg	1	29	0	0.256	0.613	Not Significant
	Non veg	1	59	0			
Pattern of	Daily	0	43	0	5.318	0.150	Not

Exercise	Alternate days	0	9	0			Significant
	weekly once	2	23	0			
	Not at all	0	13	0			
Family history of stroke	Yes	1	16	0	1.292	0.256	Not Significant
	No	1	72	0			
Duration of hypertension and current medication status	<1 year, on regular medication	0	20	0	4.091	0.252	Not Significant
	1–10 years, on regular	2	28	0			
	1–10 years, not on regular medication	0	17	0			
	>10 years, on regular medication	0	23	0			
	>10 years, not on regular medication	0	0	0			
Other Diseases	Diabetes	2	19	0	6.721	0.081	Not Significant
	Heart disease	0	30	0			
	Both	0	21	0			
	No	0	18	0			

Age:

Most participants in all age groups had average knowledge **with** no significant difference across age groups (*p = 0.957*). Therefore, age was not significantly associated with knowledge levels.

Gender:

Both males and females showed predominantly average knowledge, and the difference between them was not statistically significant (*p = 0.362*).

Education Level:

All education groups, including those with no formal education, showed only average knowledge. The association between education level and knowledge was not significant (*p = 0.651*).

Lifestyle Habits:

Whether participants smoked, consumed alcohol, both, or neither, all showed average knowledge. The variation was not statistically significant (*p = 0.360*).

Dietary Habits:

Both vegetarians **and** non-vegetarians had average knowledge, with no significant difference (*p = 0.613*).

Pattern of Exercise:

Participants who exercised weekly once were the only group with a few showing good knowledge, but overall, exercise pattern was not significantly associated with knowledge (*p = 0.150*).

Family History of Stroke:

Both groups—with and without family history—had mostly average knowledge, and the difference was not statistically significant (*p = 0.256*).

Duration of Hypertension & Medication Status:

Knowledge levels were average across all groups, regardless of medication regularity or duration of hypertension. The difference was not significant (*p = 0.252*).

Other Diseases:

Participants with **diabetes** showed a slightly higher count of good knowledge, but overall the association with other diseases was not statistically significant (*p = 0.081*), although it was near the threshold.

Hypothesis testing

All hypothesis were tested at 0.05 level of significance. To find out the significance of test, null hypothesis was stated as follows

$H_0$1: The mean post-test knowledge score regarding Hypertension Stroke Alert (HSA) among hypertensive patients who receive the Educational Intervention Program will be significantly higher than their mean pre-test knowledge score.

The findings of the study reveals the **post-test mean** increased to **16.96 ± 1.429 (84.80%)**, **compared to pre-test knowledge score 10.76 ± 2.381 (53.80%)**, with a **mean difference of 6.20 points**. The **Paired T-Test value was 28.084**, which is **highly significant** (*p < 0.001*), exceeding the table value of **1.99** at the 0.05 level. Hence the null hypothesis is rejected. Since there was a significant increase in knowledge regarding Hypertension Stroke after educational intervention .Thus the Hypertensive Stroke Alert is very effective.

$H_0$2: There is no significant association between pre-test knowledge scores of hypertensive patients regarding Hypertension Stroke Alert (HSA) and selected demographic variables.

There was no significant association between pre-test knowledge scores of hypertensive patients regarding Hypertension Stroke Alert (HSA) and selected demographic variables.

Discussion

The study demonstrated a significant improvement in knowledge regarding Hypertension Stroke Alert (HSA) among hypertensive patients following an educational intervention. Pre-test scores indicated that 97.8% had average knowledge, which improved to 83.3% showing good knowledge in the post-test. The mean score increased from 10.76 ± 2.381 to 16.96 ± 1.429 ($p < 0.001$), indicating a statistically significant effect of the intervention. These results suggest that structured health education is effective in enhancing awareness of stroke symptoms, risk factors, and preventive strategies.

Comparison with Other Studies

This study's demographic findings—majority aged over 60 and male—were consistent with findings by Kumar et al. and NFHS-5, indicating a higher prevalence of hypertension in elderly males. Education levels were low, yet no significant association was found between education and knowledge scores, echoing results from Jyoti et al. and Pandian et al., highlighting that structured interventions benefit all literacy levels. Lifestyle habits such as smoking, alcohol use, diet, and exercise were not significantly associated with knowledge, consistent with findings by Park et al., Sapała et al., and Zulianello et al. Family history of stroke and medication adherence also did not significantly influence knowledge, supporting studies by Rani et al. and Abuawad et al.

Implications for Nursing Practice

The findings highlight the critical role of nurses in delivering effective health education. Incorporating stroke alert education into routine nursing care can significantly improve patient awareness. Nurses should use opportunities in OPDs, community visits, and inpatient care to reinforce knowledge about stroke signs and prevention. Education programs should focus on individualized counseling, lifestyle modification, and the use of tools like the FAST acronym. Continuous professional development and policy support are essential for integrating such interventions into standard nursing practice to reduce the burden of hypertension-related strokes

Implications in Nursing Education

Curricula should include training on stroke risk factors, prevention, and communication skills for patient education. Simulation, outreach, and role-play activities can enhance student readiness. Nursing faculty must emphasize the educator role of nurses and mentor students in designing IEC materials.

Implications in Nursing Research

This study encourages further research on the long-term impact of education programs on stroke awareness. Future studies should explore rural-urban differences, digital interventions, and caregiver involvement. Developing validated HSA knowledge tools and evaluating interprofessional models can strengthen stroke prevention strategies led by nurses.

Conclusion

This study was done to check how well an educational program could improve knowledge about Hypertension Stroke Alert (HSA) among people with high blood pressure. Before the program, most participants had only average knowledge, and very few knew much about stroke risks or warning signs. After the educational session, there was a big improvement—most people showed good understanding, and none had poor knowledge. The change in scores was significant, proving that the program worked well.

The results also showed that the improvement in knowledge was not affected by age, gender, education, or habits. This means the program was helpful for everyone, regardless of background. The study highlights the importance of educating patients regularly to help prevent strokes.

Limitations

- The study used a small sample size from a single tertiary hospital, limiting generalizability.
- Convenient sampling may introduce selection bias.
- Long-term retention and behavior change post-intervention were not evaluated.
- Self-reported data may be influenced by social desirability bias.

Recommendations and Suggestions

This study highlights the effectiveness of structured education in improving stroke awareness among hypertensive patients. It is recommended that similar programs be implemented routinely in OPDs and communities. Awareness efforts should target low-literacy, rural, and elderly populations using culturally appropriate materials. Nurses, ASHA workers, and schools can play vital roles in promoting stroke education. Digital and media platforms should be leveraged for wider reach. Future studies should include larger, more diverse populations and assess long-term retention. Nursing curricula and healthcare policies must prioritize educational interventions in hypertension management to prevent stroke effectively.

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