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Research Paper

Stroke Risk among Older Adults

Sembian N.[1]*, Prof. (Dr.) Geeta Chaudhary[2]

ABSTRACT

Stroke remains a leading cause of death and disability among older adults worldwide, making early risk identification vital for prevention and timely intervention. This study was conducted to assess stroke risk among elderly individuals attending the outpatient department. A descriptive quantitative design was employed, with 60 participants recruited through convenience sampling based on inclusion criteria. Ethical clearance and administrative approval were secured prior to data collection. Information was obtained via self-report, using a standardized stroke risk assessment instrument. Data analysis involved both descriptive statistics for demographic and risk profiles and inferential tests to explore associations. Results showed that 41.7% of participants were aged 65 years, with 61.7% male, most being married (76.7%), of the Hindu faith (76.7%), and residing in rural areas (58.3%). Stroke risk distribution indicated 45.0% at moderate risk, 23.3% at low risk, 20.0% at very low risk, and 11.7% at high risk. Chi-square analysis revealed no significant associations between stroke risk levels and demographic variables including age, sex, education, marital status, religion, employment, residence, or family type ($p > 0.05$). In conclusion, a substantial proportion of elderly individuals were at moderate to high risk of stroke, underscoring the need for routine screening, health education, lifestyle modification, and preventive strategies to promote healthy aging.

Keywords: *Stroke risk, older adults, Prevention*

Over recent decades, the epidemiological landscape in developing nations has undergone a marked transition, with non-communicable diseases (NCDs) supplanting communicable conditions in nearly four-fifths of these countries. The combined effects of population expansion and demographic aging have amplified mortality linked to NCDs and injury-related causes. Within this spectrum, stroke emerges as a particularly prominent and disabling condition, consistently ranking as the second leading cause of death worldwide.[1]

Advancing age represents the most powerful non-modifiable determinant of stroke onset, with risk approximately doubling every decade beyond 55 years. Nearly three-quarters of all stroke events occur among individuals aged 65 years and older. With the proportion of this age group projected to expand substantially in the coming years, the incidence of stroke in

[1]PhD Scholar, Shri Venkateshwara University (SVU), Gajraula
[2]Professor, Shri Venkateshwara University (SVU), Gajraula
*Corresponding Author

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older adults is expected to escalate, posing significant challenges for both clinical practice and health policy planning. [2]

Stroke constitutes a critical global health burden, ranking among the foremost causes of mortality and long-term disability. It arises from an interruption of cerebral blood flow, either through vascular occlusion or rupture, leading to neurological deficits. The elderly population is disproportionately affected, as risk escalates markedly with advancing age. The World Health Organization (WHO) identifies age as a key non-modifiable determinant, while comorbidities such as hypertension, diabetes, obesity, sedentary lifestyle, smoking, and cardiac disorders further compound vulnerability in older adults. [3]

Globally, stroke continues to be a major driver of illness and mortality among older adults. Data from the Centers for Disease Control and Prevention (CDC) indicate that the probability of stroke nearly doubles with each passing decade after age 55. Beyond its high incidence, stroke imposes profound physical, cognitive, emotional, and social burdens, diminishing quality of life and fostering dependency in the elderly population. [4]

METHODOLOGY

A quantitative descriptive research design was utilized to assess stroke risk among elderly individuals attending the outpatient department. The target population consisted of older adults who met the specified inclusion criteria, from which a sample of 60 participants was selected via convenience sampling. Prior to data collection, ethical clearance was granted by the Institutional Ethics Committee, and necessary administrative approvals were secured. Eligible participants were approached within the outpatient clinic, briefed on the study's objectives, and enrolled after providing written informed consent.

Data were gathered through self-report using a standardized stroke risk assessment tool. Individual risk levels were subsequently computed according to the instrument's scoring guidelines. For data analysis, the collected data were cleaned, coded, and entered into statistical software. Descriptive statistics, including frequencies and percentages were employed to summarize demographic characteristics and categorize the participants' stroke risk levels. Inferential statistics were applied to determine the association between stroke risk and selected demographic and clinical variables.

RESULTS

Table -1 Frequency and percentage distribution of Demographic Variables Among Elderly Adults **N=60**

Demographic Variables		**f**	**%**
1	**Age in Years**		
1.1	65	25	41.7
1.2	66	15	25.0
1.3	67	12	20.0
1.4	68	8	13.3
2	**Sex**		
2.1	Male	37	61.7
2.2	Female	23	38.3
3	**Education**		
3.1	Non Literate	17	28.3
3.2	1st standard to 10th standard	25	41.7

Demographic Variables		f	%
3.3	12th standard	9	15.0
3.4	UG	5	8.3
3.5	PG	4	6.7
4	**Marital Status**		
4.1	Married	46	76.7
4.2	Divorced	5	8.3
4.3	Widow	9	15.0
5	**Religion**		
5.1	Hindu	46	76.7
5.2	Muslim	14	23.3
6	**Employment status**		
6.1	Agriculture	1	1.7
6.2	Self employed	11	18.3
6.3	Private Job	10	16.7
6.4	Govt Job	5	8.3
6.5	Not Working	33	55.0
7	**Area of residence**		
7.1	Rural	35	58.3
7.2	Semi Urban	20	33.3
7.3	Urban	5	8.3
8	**Nature of family**		
8.1	Joint	31	51.7
8.2	Extended Family	6	10.0
8.3	Nuclear	23	38.3

The table 1 shows the distribution of elderly participants according to their demographic characteristics. Among the 60 participants, the highest proportion (41.7%) were aged 65 years, while 13.3% were aged 68 years. Majority of the participants were male (61.7%). Regarding education, 41.7% had studied from 1st to 10th standard, whereas 28.3% were non-literate. Most of the participants were married (76.7%) and belonged to the Hindu religion (76.7%).

With respect to employment status, more than half of the participants (55.0%) were not working. Majority of the participants resided in rural areas (58.3%). In terms of family type, 51.7% belonged to joint families, followed by 38.3% from nuclear families.

Table 2 Frequency and Percentage Distribution of Stroke Risk Among Elderly Adults
N=60

Risk category	Category	f	%
Very low risk	Below 5%	12	20.0
Low Risk	5 – 9.9%	14	23.3
Moderate risk	10 – 19.9%	27	45.0
High Risk	≥ 20%	7	11.7

Maximum Score =138
Minimum Score= 0

The table 2 depicts the distribution of elderly participants according to their stroke risk categories. Among the 60 participants, the majority (45.0%) had a moderate risk of stroke

(10–19.9%), followed by 23.3% who had low risk (5–9.9%). About 20.0% of the participants were found to have very low risk (below 5%), while 11.7% had high risk (≥20%). The findings indicate that a considerable proportion of elderly persons were at moderate to high risk for developing stroke.

Table 3 Chi-square Analysis Showing the Association Between Selected Demographic Variables and Stroke Risk Levels Among Elderly Adults

N=60

Demographic Variable		**Very Low Risk**	**Low Risk**	**Moderate risk**	**High Risk**	**df**	**X2**	**P value**
1	**Age in years**							
1.1	65	6	8	9	2	9	7.926	.542
1.2	66	4	4	6	1			
1.3	67	1	1	8	2			
1.4	68	1	1	4	2			
2	**Sex**							
2.1	Male	7	7	19	4	3	1.788	.617
2.2	Female	5	7	8	3			
3	**Education**							
3.1	Non Literate	4	3	10	0	12	17.558	.130
3.2	1st standard to 10th standard	2	8	10	5			
3.3	12th standard	2	2	4	1			
3.4	UG	1	1	3	0			
3.5	PG	3	0	0	1			
4	**Marital Status**							
4.1	Married	9	11	20	6	6	4.157a	.655
4.2	Divorced	0	1	4	0			
4.3	Widow	3	2	3	1			
5	**Religion**							
5.1	Hindu	10	12	19	5	3	1.644a	.649
5.2	Muslim	2	2	8	2			
6	**Employment status**							
6.1	Agriculture	1	0	0	0	12	14.134	.292
6.2	Self employed	1	1	6	3			
6.3	Private Job	2	1	6	1			
6.4	Govt Job	0	1	3	1			
6.5	Not Working	8	11	12	2			
7	**Area of residence**							
7.1	Rural	8	8	16	3	6	8.279a	.218
7.2	Semi Urban	2	6	10	2			
7.3	Urban	2	0	1	2			
8	**Nature of family**							
8.1	Joint	3	10	14	4	6	10.275	.114
8.2	Extended Family	1	0	5	0			
8.3	Nuclear	8	4	8	3			

The table 3 presents the association between selected demographic variables and stroke risk levels among elderly participants using the Chi-square test. The findings revealed that there was no statistically significant association between stroke risk levels and any of the selected demographic variables such as age, sex, education, marital status, religion, employment status, area of residence, and nature of family, as all the p-values were greater than 0.05.

However, the majority of participants with moderate stroke risk were observed among males, individuals aged 65 years, participants educated up to 1st to 10th standard, married individuals, Hindus, non-working participants, rural residents, and those belonging to joint families. The results indicate that demographic variables did not significantly influence the stroke risk levels among the elderly participants in the present study.

DISCUSSION

The study revealed that most elderly participants (45%) were at moderate risk of stroke, while 23.3% had low risk, 20% very low risk, and 11.7% high risk. These results highlight a substantial vulnerability among older adults, underscoring the need for early detection and preventive strategies. The elevated risk is largely linked to advancing age and common vascular factors such as hypertension, diabetes, obesity, smoking, and sedentary lifestyle, reinforcing age as the strongest non-modifiable determinant of stroke.

The present findings align with those of Xia et al. (2019), who demonstrated that stroke prevalence and its determinants were markedly elevated among older adults, with hypertension emerging as a principal contributor. Likewise, a recent systematic review confirmed that stroke remains highly prevalent in elderly populations worldwide and underscored the critical need for early risk detection and preventive interventions in this age group. [5]

Findings from Ansari et al. identified hypertension, diabetes, smoking, obesity, cardiac disease, and hypercholesterolemia as key determinants of stroke among older adults. These results corroborate the present study and emphasize the necessity of routine screening, lifestyle modification, and targeted health education to mitigate stroke risk in the elderly population. [6,7]

The association between age and stroke risk observed in this study is consistent with Feigin et al. (2022), who identified advancing age as one of the most powerful non-modifiable predictors of stroke. However, in the present investigation, age did not reach statistical significance, a finding that may reflect the restricted sample size and limited age variability among participants. [6]

In relation to sex, the present study observed that male participants exhibited comparatively higher levels of moderate and high stroke risk than females, though the association did not reach statistical significance. Comparable results were documented by Appelros et al. (2009), who noted that stroke incidence tends to be greater among men, largely attributable to increased exposure to behavioral and cardiovascular risk factors. [8]

In the present study, educational attainment and employment status did not demonstrate a statistically significant association with stroke risk. Nonetheless, individuals with lower levels of education and those who were unemployed exhibited comparatively higher moderate risk scores. This pattern may reflect limited health literacy, unhealthy lifestyle behaviors, and reduced access to preventive services. Comparable trends have been

documented in prior epidemiological investigations, reinforcing the influence of socioeconomic factors on stroke vulnerability among older adults. [9]

The present study did not identify a statistically significant relationship between marital status, religion, residential area, or family structure and stroke risk levels. However, rural participants and those from joint families exhibited comparatively higher moderate risk scores. These variations may reflect inequities in healthcare access, lifestyle practices, dietary patterns, and socioeconomic conditions, which can influence vulnerability to stroke among older adults. [10]

CONCLUSION

The present study assessed the risk of stroke among Older Adults attending the outpatient department. The findings revealed that the majority of participants had moderate risk of stroke, while a smaller proportion had high risk, indicating the need for early identification and preventive measures among older adults.

The study also found no statistically significant association between stroke risk levels and selected demographic variables such as age, sex, education, marital status, religion, employment status, area of residence, and nature of family.

The findings highlight the importance of regular screening, health education, lifestyle modification, and early intervention to reduce stroke risk and promote healthy aging among Older Adults.

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Conflict of Interest
The authors declare no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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