Original Article

Hypertensive Stroke in Bangladesh: Demographic Insights from a Hospital-Based Study

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ABSTRACT:

Background: *Stroke remains one of the leading causes of morbidity, mortality, and long-term disability worldwide. It poses a particularly high burden in low- and middle-income countries such as Bangladesh, where limited access to preventive healthcare, lack of awareness, and poor control of hypertension significantly contribute to disease prevalence. Hypertension, the most common modifiable risk factor, is responsible for nearly two-thirds of stroke cases in the Bangladeshi population. Despite medical advances, the demographic characteristics of hypertensive stroke patients in this region remain underexplored, highlighting the importance of population-based data for designing effective prevention strategies.*

Objective: *The present study aimed to assess the demographic profile of hypertensive patients presenting with stroke at a tertiary care hospital in Sylhet, Bangladesh, in order to identify the age, sex, occupational, and socio-economic patterns associated with stroke occurrence in this high-risk group.*

Methods: *A cross-sectional observational study was conducted over a one-year period among 96 hypertensive patients admitted with clinically and radiologically confirmed stroke in the Department of Medicine and Neuromedicine at Sylhet M.A.G. Osmani Medical College Hospital. Data were collected through a structured, pre-tested questionnaire covering demographic variables such as age, gender, occupation, socio-economic status, smoking habits, and family history of hypertension or stroke. Descriptive statistics including frequency, percentage, mean, and standard deviation were used for analysis.*

Results: *The mean age of participants was 60 ± 11.46 years, ranging from 30 to 80 years, with the highest incidence among individuals aged 51–60 years (34.4%). Females comprised 68.8% of the study group. Housewives (59.4%) and farmers (21.9%) were the most affected occupations, while 55.2% of patients belonged to the lower-middle socio-economic class. A positive family history of hypertension was observed in 44.8% of cases, and 15.6% were smokers.*

Conclusion: *Stroke primarily affected middle-aged to elderly hypertensive females from lower socio-economic backgrounds. These findings underscore the urgent need for targeted community-based screening, public health education, and effective blood pressure management programs to reduce the growing burden of stroke in Bangladesh.*

Key Words:
Stroke; Hypertension; Demographic profile; Risk factors; Socio-economic status; Bangladesh; Cross-sectional study; Epidemiology

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Introduction

Stroke is one of the most devastating neurological disorders, accounting for significant mortality and long-term disability worldwide (Feigin, 2005). Globally, nearly 12 million new stroke cases occur annually, with developing countries bearing more than 80% of this burden (Feigin et al., 2014). In Bangladesh, stroke ranks as the third leading cause of death, and hypertension is the most common modifiable risk factor associated with it (Islam et al., 2013). Despite advances in acute stroke management, prevention remains the most effective approach to reducing the national burden (Leys et al., 2002).

Demographic factors such as age, sex, occupation, socio-economic status, and family history are crucial in determining stroke risk and outcome (Kuller, 2000). The prevalence of stroke increases markedly with age, particularly after the age of 50 years, due to vascular aging and cumulative exposure to risk factors (Donnan et al., 2008). Gender differences have also been widely reported—males tend to experience strokes earlier, whereas females show higher case fatality, partly due to hormonal and longevity factors (Bushnell et al., 2014). Socio-economic status influences access to healthcare, diet, and medication adherence, leading to inequities in stroke incidence and outcomes (Lackland et al., 2014). Furthermore, family history of hypertension or stroke increases susceptibility, indicating possible genetic and shared environmental contributions (Agarwal et al., 1976). Smoking and physical inactivity are additional determinants commonly observed in lower-income groups (Yano et al., 1986).

In Bangladesh, demographic studies on stroke patients, particularly among hypertensives, remain scarce. Understanding these characteristics is vital for developing population-specific prevention strategies. Therefore, this study aimed to assess the demographic profile of hypertensive patients presenting with stroke at a tertiary care hospital in Sylhet, Bangladesh.

Methodology

A descriptive, cross-sectional study was conducted in the Department of Medicine and Neuromedicine at Sylhet M.A.G. Osmani Medical College Hospital, Bangladesh, from January to December 2015. The study included 96 hypertensive patients diagnosed with stroke based on CT or MRI findings. Patients without hypertension or with non-vascular brain lesions were excluded. A purposive sampling technique was applied. Data were collected using a pretested, structured questionnaire that recorded demographic variables such as age, sex, occupation, socio-economic status, smoking habits, and family history of major non-communicable diseases (hypertension, diabetes, ischemic heart disease, and stroke). Socio-economic status was classified as middle class or lower-middle class based on monthly income and occupation.

Ethical approval was obtained from the Institutional Ethical Committee, and informed written consent was secured from all participants. Data were coded, entered, and analyzed using simple descriptive statistics (frequencies, percentages, means, and standard deviations). Results were presented in tabular and graphical formats.

Results

Table 1 presents the distribution of stroke patients according to sex. Among the 96 hypertensive stroke patients, females constituted the majority with 66 cases (68.8%), while males accounted for 30 cases (31.3%), giving a male-to-female ratio of approximately 1:2.2. This indicates a higher prevalence of stroke among hypertensive females in the study population, which may reflect gender differences in hypertension control, health awareness, and healthcare access.

Table 1: Distribution of patients by sex (n=96)

Sex	No of patients	Percentage (%)
Male	30	31.3
Female	66	68.8
Total	96	100.0

Figure 1 illustrates the age distribution of the hypertensive stroke patients. The majority of cases were observed among individuals aged 51–60 years (34.4%), followed by those aged 61–70 years (32.3%). Patients aged 41–50 and 71–80 years each accounted for 12.5%, while only 8.3% were between 30–40 years. The findings indicate that stroke incidence was highest among middle-aged and early elderly patients, highlighting an age-related rise in susceptibility to cerebrovascular events among hypertensive individuals.

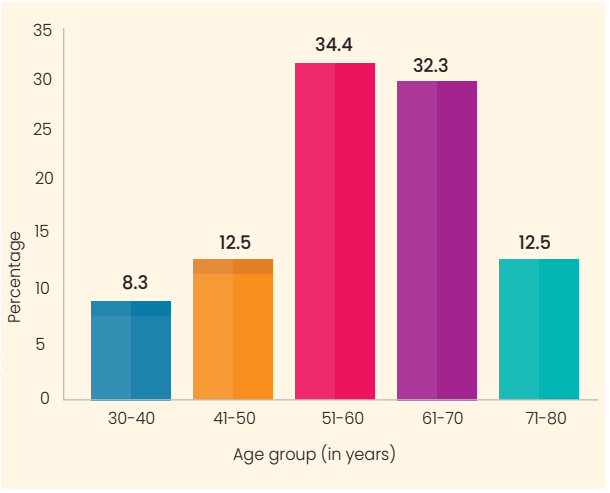

Table 2 demonstrates the occupational distribution of hypertensive stroke patients. The majority of patients were housewives, accounting for 59.4% of the study population, followed by farmers (21.9%) and labourers (12.5%). Businessmen and service holders each represented 3.1% of cases. These findings suggest that stroke was most prevalent among individuals engaged in non-salaried or physically demanding occupations, particularly women in household roles, reflecting socio-economic and lifestyle disparities among hypertensive populations.

Table 2: Distribution of patients by different types of occupation with stroke (n=96)

Occupation	No of patients	Percentage (%)
Farmer	21	21.9
Labourer	12	12.5
Housewife	57	59.4
Businessman	3	3.1
Service	3	3.1
Total	96	100

Table 3 illustrates the socio-economic distribution of hypertensive stroke patients. The majority of the patients (55.2%) belonged to the lower-middle-class group, while 44.8% were from the middle class. This predominance of lower socio-economic status among stroke patients highlights the influence of financial constraints, limited access to healthcare, and inadequate control of hypertension on stroke vulnerability within this population.

Table 3: Distribution of the patients by socio-economic status of patients (n=96)

Socioeconomic status	No of patients	Percentage (%)
Middle class	43	44.8
Lower middle class	53	55.2
Total	96	100.0

Table 4 presents the distribution of patients according to their family history of major non-communicable diseases. A positive family history of hypertension was reported by 44.8% of patients, followed by stroke in 26%, ischemic heart disease in 15.6%, and diabetes mellitus in 9.4%. The predominance of hereditary hypertension and stroke suggests a strong genetic and familial predisposition among the study population, emphasizing the importance of early screening and family-based preventive strategies.

Table 4: Distribution of the patients by family history (n=96)

Family history	No of patients	Percentage (%)
F/H of HTN	43	44.8
F/H of DM	9	9.4
F/H of IHD	15	15.6
F/H of stroke	25	26.0

Discussion

The present study provides insight into the demographic profile of hypertensive stroke patients in Bangladesh. The mean age of 60 years aligns with findings from South Asian studies where stroke commonly affects individuals above 50 years (Khan et al., 2013). Increasing age contributes to vascular stiffness, endothelial dysfunction, and cumulative exposure to risk factors (Feigin et al., 2014). The predominance of females (68.8%) contrasts with many international studies where males are more affected (Bogousslavsky et al., 1996; Hauser & Beghi, 2008). This female predominance in the current study may reflect the higher proportion of housewives in the sample and limited healthcare access among women in rural Bangladesh (Haque et al., 1987). Hormonal changes during menopause, longer lifespan, and untreated hypertension may further explain the gender difference (Bushnell et al., 2014).

The majority of patients were housewives and farmers, indicating that physically demanding labor, limited

education, and poor health awareness may contribute to delayed diagnosis and irregular antihypertensive therapy (Nath et al., 2015). The higher proportion of lower-middle-class individuals mirrors socio-economic disparities influencing hypertension control and stroke risk (Mackenbach et al., 2017). Poor health literacy, irregular drug use, and dietary factors such as high salt intake are often observed in these populations (Hu et al., 2005).

A significant number (44.8%) reported a family history of hypertension, consistent with previous evidence suggesting genetic predisposition to elevated blood pressure and stroke (Graffagnino et al., 1994; Harmsen et al., 1990). Although only 15.6% were smokers, tobacco remains a major independent risk factor for both ischemic and hemorrhagic strokes (Yano et al., 1986; Donnan et al., 1989). The relatively low smoking rate could be due to the high representation of women, who smoke less in Bangladesh (Khealani et al., 2008).

Collectively, these findings indicate that demographic factors such as female gender, middle to older age, low socio-economic status, and family history of hypertension significantly characterize the stroke-prone hypertensive population in Bangladesh. Early community-based screening and education, particularly targeting women and low-income groups, are essential to prevent stroke occurrence and recurrence.

Conclusion

The demographic analysis reveals that hypertensive stroke patients in Bangladesh are predominantly middle-aged to elderly females from lower socio-economic backgrounds, with a significant family history of hypertension. These findings highlight the urgent need for community-based hypertension screening, lifestyle modification programs, and gender-sensitive stroke prevention strategies.

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