Faculty of Medicine

University of Dhaka

Urinary tract symptoms in female patients with stroke and impact on their quality of life

Submitted by:

Rabeya Khatun

Bachelor of Science in Physiotherapy

DU Roll No: 1536

DU Registration No: 6242

Session: 2019-2020

Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

Bangladesh

August 2025

We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this thesis entitled, **"Urinary tract symptoms in female patients with stroke and impact on their quality of life"** Submitted by **Rabeya Khatun**, for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. in PT).

.....

Prof. Md. Obaidul Haque
Vice Principal
BHPI, CRP.

.....

Prof. Dr. Mohammad Sohrab Hossain, PhD
Professor of Physiotherapy, BHPI
Executive Director, CRP.

.....

Mohammad Habibur Rahman
Assistant Professor of Physiotherapy
School of Science and Technology
Bangladesh Open University, Gazipur-1750.

.....

Prof. Dr. Mohammad Anwar Hossain, PhD
Professor of Physiotherapy, BHPI
Senior Consultant and Head
Department of Physiotherapy, CRP.

.....

Dr. Shazal Kumar Das, PhD
Assistant Professor and Head
Department of Physiotherapy
BHPI, CRP.

Approved Date: 11.08.25

Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that same any publication, presentation or dissemination of information of the study. I would be bound to take consent from the Supervisor & Department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

Name: Rabeya Khatun **Date:** 11.08.2025

Rabeya Khatun
Bachelor of Science in Physiotherapy
DU Roll No: 1536
DU Registration No: 6242
Session: 2019-2020
BHPI, CRP, Savar, Dhaka-1343
Bangladesh

Contents

Acknowledgement

Firstly, I would like to convey my thankfulness to the Almighty Allah for granting me the capacity to successfully and on time finish this research project. Additionally, I would like to express gratitude to my family, especially my parents who always kept encouraging me to finish this project.

I am incredibly appreciative and thankful to my honorable supervisor, Professor **Md. Obaidul Haque**, Vice-Principal, Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka, for his valuable time, intelligent supervision, excellent guidance, and constant provision of the best advice to help me to finish this project.

It's an honor to mention Professor **Dr. Mohammad Anwar Hossain**, PhD, Professor, Department of Physiotherapy, BHPI, Senior Consultant & Head, Department of Physiotherapy, CRP and **Dr. Shazal Kumar Das**, PhD, Assistant Professor & Head, Department of Physiotherapy, BHPI for their good advice, support and guide to conduct this research. BHPI, CRP, Savar, Dhaka. I would like to express my admiration to **Muhammad Millat Hossain**, Associate Professor, Department of Rehabilitation Science, Member Secretary, Institutional Review Board, (IRB), BHPI, CRP, Savar, Dhaka, for allowing me to conduct this research.

I gratefully acknowledge my respected teachers **Fabiha Alam**, Assistant professor, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka, **Dr. Shamima Islam Nipa** Assistant Professor, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka and **Saiba Muhammad Sabrin**, Lecturer, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka.

I wish to thanks to all respectable Physiotherapy staff working at CRP Neurology unit for helping data collection.

I wish to thank the Librarian Madam of BHPI and her associates for their kind support to find out all related books, journals and also access to internet.

I would like to thanks Riyad Mahmud, Afroja Binta Lasker, Mahmuda Islam. Finally, I would like to thanks those people who eagerly participated as study samples in the conduction of my study and the entire individual who are directly or indirectly involve with this study.

Acronyms

BHPI	Bangladesh Health Professional Institute
BMRC	Bangladesh Medical Research Council
CRP	Centre for the Rehabilitation of the Paralysed
CVA	Cerebrovascular Accident
IRB	Institutional Review Board
LUTS	Lower Urinary Tract Symptoms
QoL	Quality of Life
SPSS	Statistical Package for the Social Science
TIA	Transient Ischemic Attack
WHO	World Health Organization

List of tables

List of figures

Abstract

Background: Stroke is a major neurological condition that causes long-term disability, particularly among women. Beyond motor and cognitive impairments, many female stroke survivors experience urinary tract symptoms (UTS). These symptoms can severely affect the quality of life in female stroke survivors. **Objectives:** To know the socio-demographic information, comorbidity and stroke related information. Find out the urinary tract symptoms and know the impact of urinary tract symptoms on quality of life in female patients with stroke. **Methodology:** The study design was a cross sectional study. Total 105 samples were selected by using hospital based random sampling technique for this study from Neurology unit of Physiotherapy Department, CRP, Savar. All data were collected through face-to face interview by using self-structured questionnaire, Kings Health Questionnaire. The study was conducted by using quantitative descriptive analysis through using SPSS software 25.0 version. **Results:** Among 105 female patients with stroke, followed by urge incontinence and nocturia each reported by 58.1%. Less frequent symptoms included incomplete emptying at 35.2 %, weak stream at 30.5 %, dysuria at 28.6 %, and hesitancy at 25.7 %. Results from the impact of urinary tract symptoms on quality of life indicated moderate impacts across all quality-of-life domains, with general health perception having the highest mean score of 60.05, while personal relationships were the least impacted. Emotional well-being, incontinence impact, and social and physical limitations were also notably influenced, indicating a broad and multidimensional effect of urinary symptoms. Overall, urinary symptoms significantly reduced quality of life. **Discussion:** Urinary symptoms among female stroke patients, with nocturia, urge incontinence, and stress incontinence being the most common. These symptoms significantly affected various aspects of quality of life, particularly general health perception and emotional well-being. The findings emphasize the importance of early identification, comprehensive assessment, and targeted management of urinary symptoms during stroke rehabilitation. Timely intervention can enhance both physical and psychological recovery, contributing to improved functional outcomes and overall quality of life in this vulnerable population.

Key words: Stroke, urinary tract symptoms, quality of life.

Chapter-i Introduction

1.1 Background

Stroke is the second leading cause mortality and the third leading cause of death and disability combined around the world (Golubnitschaja et al., 2024). A stroke is a health problem which is characterized by an abrupt interruption in the cerebral blood flow and this disturbance can result in significant repercussions, as the brain depends on an uninterrupted provision of nourishment as well as oxygen transported via the bloodstream, when this supply is disrupted, neuronal cells may commence dying within minutes, resulting in possibly irreparable harm (Vlisides and Moore 2021).
'Rapidly developed clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin' was the definition of stroke given by the World Health Organization in 1970 (Koradiya et al., 2023).

A cerebrovascular accident (CVA), often known as a stroke, transpires while an artery in the brain is obstructed, either temporarily or persistently, hindering the flow of blood and oxygen to brain cells and either of these requirements results in mortality and cerebral harm to tissues (Williams and Oka, 2024). Stroke is the predominant cause of significant physical disability, impacting approximately 40% of stroke survivors (Varghese and Barboza, 2018).

In 2022, the World Stroke Organization reported about 12.2 million additional stroke cases per year, encompassing all ages and genders, and annually, six and a half million individuals succumb to stroke (Maurice and Dahdah, 2024). Stroke affects 15 million individuals worldwide annually, causing 5 million fatalities and leaving an additional 5 million survivors with enduring disabilities (Jambi et al., 2024).

Mortality due to stroke is expected to reach 9.7 million, reflecting a growing burden of disease by 2050 (Feigin et al., 2023). Strokes can occur across a wide range of ages, with significant occurrences noted in young adults while strokes are predominantly associated with older populations, approximately 10% to 15% of total strokes happen to individuals age 18 to 49 year (Ekker et al., 2019). Men exhibit higher stroke admission rates compared to women, with rates for ischemic strokes at 378.1 versus

346.7 per 100,000 and for hemorrhagic strokes at 75.6 versus 65.5 per 100,000 where female gender correlates with increased death in the hospital for each kind of stroke (Kelly et al., 2024).

Usually, ischemic stroke and hemorrhagic stroke are the two varieties of stroke that are usually different from one another (Anita and Zoran, 2019). An ischemic stroke occurs due to the sudden interruption of cerebral blood flow, leading to neurological impairments and potential death (Li et al., 2024). Ischemic stroke constitutes about 76% of all incidents of stroke and has a substantial effect on worldwide health, impacting about 77.2 million people as of 2019 (Golubnitschaja et al., 2022). Hemorrhagic stroke, which includes intracerebral hemorrhage (ICH) and subarachnoid hemorrhage, accounts for 15% of the overall incidence of stroke (Puy et al., 2023).

Usually, there are three types of stroke risk factors: non-modifiable, semi-modifiable, and modifiable where non-modifiable risk factors involve age, sex, family history of stroke, and not having enough education and semi-modifiable risk factors involve multiple conditions that can be partially changed through medication or lifestyle changes, such as high blood pressure, diabetes mellitus, dyslipidemia, and coronary artery disease and modifiable risk factors include smoking cigarettes, inadequate food quality, and not getting enough exercise on a regular basis (Johansson et al., 2021).

Stroke is the third most common reason for death in Bangladesh, after coronary cardiovascular disease and respiratory illnesses like pneumonia and influenza (Islam et al., 2013). The World Health Organization has stated that Bangladesh holds the 84th position worldwide for stroke-related mortality (Sarkar et al., 2023). Although full incidence data is lacking, a national study indicates a stroke prevalence of 11.39 out of 1000 people in Bangladesh and the rate of individuals aged over 60 years has significantly risen to 30.10 per thousand (Mondal et al., 2022).

Stroke complications include aspiration pneumonia at 6.5 percent, dehydration at 6.7 percent, urinary tract infections at 10.1 percent, and constipation at 4.4 percent, these problems happen much more often in people with dysphagia which is a separate risk factor for each of these bad health outcomes (Bond, Kleinig and Murray, 2023). Pneumonia, heart problems, venous thromboembolism, dysphagia, incontinence, depression, and pressure ulcers are all common problems that happen after a stroke, these problems make recovery much harder and often require targeted interventions to

prevent and treat them during the acute and subacute recovery phases (Kumar, Selim and Caplan, 2020).

Approximately 60% of stroke survivors experience lower urinary tract symptoms (LUTS), in particular among those with damage to the frontal and insular cortices (Tateno et al., 2020). The primary risk factors underlying the emergence of urinary tract symptoms following a stroke encompass the size and location of the brain damage, mental retardation, motor and sensory impairments, impaired vision, and an inheritance of aphasia, many of which are associated with lower urinary tract problems (Bizovičar, 2018). Lower urinary tract symptoms (LUTS) are very common in people who have had a stroke and they can affect as many as 94% of people (Tibaek, 2018).

Urinary symptoms in stroke patients include urinary incontinence, frequency, urgency, dysuria, urge incontinence, involuntary voiding, and overflow incontinence, with neurogenic detrusor overactivity as the predominant urodynamic result (Cinar et al., 2022).

A study demonstrates that 93.5% of individuals with stroke experience one or more lower urinary tract symptom (LUTS), with nocturia being the predominant issue (Akkoc et al., 2019). The two most frequently recorded symptoms are urinary incontinence (UI) and difficulties in voiding, with urinary incontinence is a particularly prevalent urinary symptom, impacting nearly one-third of individuals with acute stroke, and persists in 15–25% of cases one-year post-stroke, while its occurrence ranges from 28% to 79% (Agapiou et al., 2024). 25.4% of people who had a stroke got urinary tract symptoms and there was a strong link between being female and having severe stroke symptoms and a higher risk of urinary tract symptoms which shows how important it is to keep an eye on urinary symptoms in these patients (Shabbir, Afshraf and Ahmed, 2022).

The main cause of urinary incontinence in stroke survivors is detrusor hyperactivity, which raises morbidity and disability (Tuong, Klausnerand and Hampton, 2016). Multiple cerebral areas may be involved in post-stroke urine dysfunction and lesions in the brainstem may result in a range of urinary tract symptoms and A defect above the pontine micturition center (PMC) makes the bladder go out of control and an obstruction within the sacral spinal cord and pontine micturition center leads to a type of sphincter-detrusor dyssynergia or spastic bladder, which is damage above the

pontine micturition center, typically result in bladder storage failure and frontoparietal lesions are linked to urinary incontinence, while insular deficits are related to bladder retention (Agapiou et al., 2024).

Urinary problems in female individuals with strokes markedly affects their quality of life, resulting in discomfort and distress, and the potential causes may involve neurological dysfunction (Schuster, Kelečić and Uglešić, 2022).

1.2 Rationale

Currently, urinary tract symptoms are increasingly prevalent among female stroke patients in Bangladesh, adversely affecting their quality of life. Bangladesh is regarded as a developing nation. In our country, women exhibit minimal concern about their health. Healthcare facilities are inadequate in the rural regions of our country. Women received treatment from unlicensed health care providers. Consequently, they encounter numerous challenges. Females experience greater suffering than males due to feelings of embarrassment or an inability to properly reveal their difficulties to family members and medical professionals. Urinary tract problems are among the most prevalent complications in females following a stroke. Numerous female stroke patients encounter significant challenges due to urinary tract issues in their lives. A multitude of studies have been conducted worldwide on this particular topic. Nevertheless, I want to make it clear that there has been no research done in Bangladesh or CRP on "Urinary tract symptoms in female patients with stroke and their impact on quality of life". Consequently, urinary tract issues impact the quality of life of female stroke survivors. The aim of my study is to know the urinary tract symptoms in female patients with stroke and their impact on quality of life. My research will clarify urinary tract symptoms and their impact on the quality of life of female patients with stroke. Consequently, it will assist in rehabilitation and enable other health providers to provide appropriate treatment prior to a female experiencing urinary tract symptoms following a stroke.

1.3 Research question

What are the urinary tract symptoms in female patients with stroke and impact on their quality of life?

1.4 Objectives

1.4.1 General objective

To find out the urinary tract symptoms of female stroke patients and impact on their quality of life.

1.4.2 Specific objectives

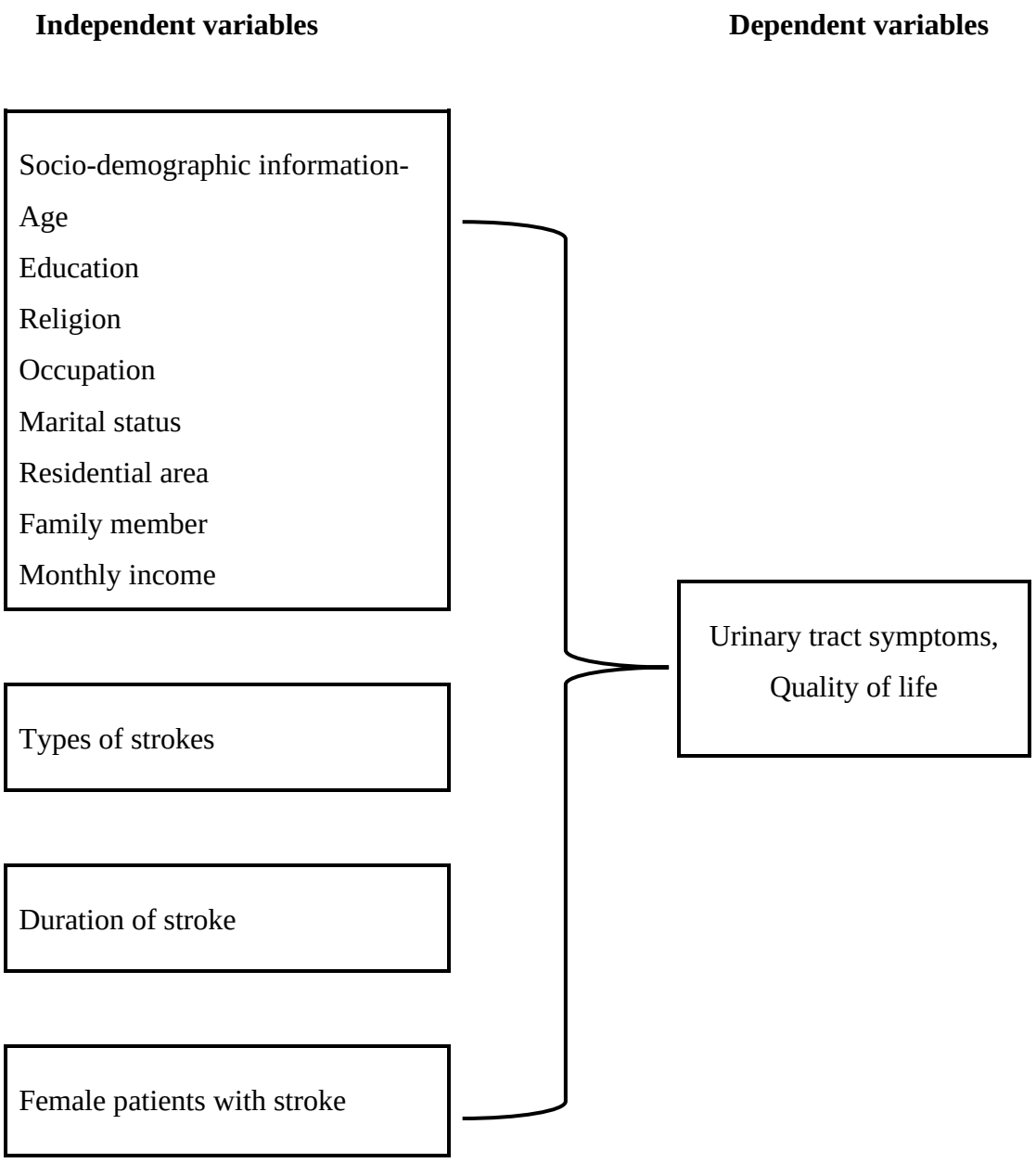
i. To know the socio-demographic information of female stroke patients.

ii. To know about comorbidity and stroke related information of participants.

iii. To find out the urinary tract symptoms among participants.

iv. To know the impact of urinary tract symptoms on quality of life among the participants.

1.5 Conceptual framework



1.6 Operational definition

Stroke

A stroke is when blood flow to a part of the brain suddenly stops, which damages brain tissue because it doesn't get enough oxygen and nutrients. A blockage in a blood vessel or a break in a blood vessel can both cause this break. If not treated right away, the brain cells that are affected can die within minutes, which could cause permanent neurological damage, disability, or death.

Transient ischemic attack

A Transient Ischemic Attack (TIA) is a temporary neurological dysfunction resulting from a sudden interruption of blood flow to a region of the brain, spinal cord, or retina, without resulting in permanent injury that generally persist for several minutes to a few hours and completely resolve within 24 hours.

Ischemic stroke

An ischemic stroke occurs when a clot constricts or obstructs blood vessels in the brain, diminishing blood flow and resulting in the death of brain cells due to oxygen deprivation.

Hemorrhagic stroke

A rupture of a blood vessel in the brain results in blood leakage into the brain tissue is known as hemorrhagic stroke.

Urinary tract symptoms

Urinary tract symptoms (UTS) refer to a range of signs and discomforts associated with the urinary system, which includes the kidneys, ureters, bladder, and urethra.

Quality of life

Quality of life is extensive as well as multifaceted, involving personal views of life's positives and negatives. It covers well-being, health, and functioning, but also includes one's overall evaluation of experiences, mental state, and social conditions.

Chapter-ii Literature review

The term “stroke” has its origins in the ancient Greek word “apoplexy,” which means to “violently strike down,” a description attributed to Hippocrates and historically, apoplexy encompassed a range of central nervous system disorders, perceived as sudden and random afflictions affecting otherwise healthy individuals and over time, the understanding of stroke evolved, particularly with Johann Jacob Wepfer's 17th-century work, which identified specific causes such as hemorrhage or blockage in the brain (Zrelak, 2021).

A stroke, or cerebrovascular accident, is an urgent medical condition that arises when the blood supply to the brain is disrupted, resulting in a deficiency of oxygen and vital nutrients to brain tissue and this disruption can cause swift neurological deterioration and, if not addressed promptly, may result in irreversible brain damage or death (Shamshiev et al., 2024).

Stroke is a clinically defined syndrome characterized by an acute focal neurological deficit resulting from vascular injury (infarction or hemorrhage) in the central nervous system, it ranks as the second leading cause of death and disability globally and stroke is not a singular disease; rather, it can arise from a diverse array of risk factors, disease processes, and mechanisms (Herra, 2025). Stroke is defined as a clinical manifestation of impaired cerebral function, either focal or generalized (global), which occurs rapidly, lasts more than 24 hours, or ends in death, in the absence of any identified cause other than vascular disorders (Pelawi et al., 2024).

Cerebral ischemia and infarction happen when an artery that supplies blood to the brain suddenly gets blocked or less often when blood flow slows down beyond a narrowed artery, arterial wall disease, cardiac embolism, hematological disorders, and other manageable conditions are some of the causes, these conditions are more common in younger stroke patients but they can also affect older people, head trauma encephalitis or different types of global encephalopathy can cause venous infarction (Etminan et al., 2021).

Ischemic stroke and hemorrhagic stroke are the two types of strokes that can occur (Shamshiev et al., 2024). Ischemic stroke occurs due to atherosclerosis and

microvascular dysfunction induced by hypertension, leading to reduced blood flow and subsequent brain tissue damage, and this condition is characterized by sudden focal neurological deficits resulting from vascular injury in the central nervous system (Muhammad ,Larasati and Anisa, 2025). Ischemic stroke constitutes a significant portion of all stroke cases, accounting for approximately 87% of total strokes globally (Perdana, Ardhi and Susanto, 2024).

Hemorrhagic strokes, which account for approximately one fifth of all strokes, are caused by a rupture in the wall of the cerebral artery, which causes blood to leak out of the vessel, as a consequence the blood does not reach the brain tissue in the region that is supplied by the ruptured artery, furthermore the blood that escapes from the damaged vessel causes the destruction of the surrounding nervous tissue and causes an increase in pressure inside the skull, which disrupts the functioning of the entire brain, hemorrhagic strokes can be broken down into two categories: intracerebral hemorrhages and subarachnoid hemorrhage (Ręba, 2020). Hemorrhagic stroke causes neurological symptoms that occur suddenly and often followed by symptoms due to the spatial effects or increased intracranial pressure (TIK), leading to primary and secondary injuries, including neuronal damage, inflammation, and oxidative stress, with a higher incidence in Asia attributed to hypertension (Muhammad and Nabila, 2023). The two most common subtypes of hemorrhagic stroke are intracerebral hemorrhage (ICH) and subarachnoid hemorrhage (SAH), each of these hemorrhagic stroke subtypes accounts for 5–10% of all strokes, hemorrhagic stroke accounts for approximately 5–15% of all acute stroke events that occur around the world (Biffi, 2018).

Stroke risk factors are categorized into two groups, modifiable and irreversible, and understanding these factors is essential to prevent stroke at an early stage by addressing modifiable risks, modifiable risk factors include hypertension, dyslipidemia, diabetes mellitus, inadequate physical activity, abnormal blood sugar and cholesterol levels, alcohol and drug use, kidney disease, tuberculosis, cardiovascular conditions such as heart disease and heart failure, obesity including central obesity, atrial fibrillation, and smoking, all of which are recognized as being linked to stroke occurrence, on the other hand, irreversible risk factors consist of age, gender, level of education, family history, income, employment status, previous history of stroke, and whether an individual resides in a rural or urban area (Agianto et al., 2023).

Hemorrhagic strokes present with distinct clinical manifestations that can significantly impact patient outcomes, with common symptoms include severe headaches, altered consciousness, vomiting, and focal neurological deficits, which vary depending on the location of the hemorrhage within the brain (Filho et al., 2021). Clinical manifestations of ischemic stroke characterized by a rapid appearance of localized neurological impairments, such as difficulty speaking, weakness, or paralysis, often accompanied by symptoms like facial drooping and these symptoms persist for over 24 hours and may lead to coma or death (Gunardi, Mariska and Nabila, 2024). Symptoms of ischemic stroke can include sudden onset of vertigo, ataxia, aphasia, hemianopia, and sensorimotor deficits (Ignacio et al., 2023). Headache was documented as the most frequent clinical symptom among patients, being present in 75.0% of the cases, followed in prevalence by aphasia which occurred in 60.3% of cases and hemiparesis which was reported by 53.5% of patients, in individuals diagnosed with ischemic stroke, the majority exhibited signs such as facial palsy in 58.3%, aphasia in 60.0%, and headache in 71.7%, likewise, in hemorrhagic stroke cases, headache was also the most commonly reported symptom at 78.6%, followed by aphasia at 60.7% and vomiting at 57.1% (Fekadu et al., 2019).

Stroke is diagnosed using brain imaging and physical tests, doctors may conduct blood tests to check cholesterol and blood sugar levels, assess pulse for irregularities, and measure blood pressure, where Brain imaging helps determine the cause of the stroke (blocked artery or burst blood vessel), the affected brain region, severity, and risk of transient ischemic attack (TIA), enabling appropriate treatment (Singh et al., 2023).

Common diagnostic techniques for stroke incorporate non-contrast computed tomography (CT) scans and magnetic resonance imaging (MRI) which is especially diffusion-weighted imaging, CT perfusion, and MR perfusion; these methods help differentiate between ischemic and hemorrhagic strokes and assess brain tissue at risk for timely intervention (Bolaños et al., 2024). Computed tomography (CT) scans and magnetic resonance imaging (MRI) are two instances of common imaging techniques, magnetic resonance imaging (MRI) scans are better at finding major strokes than computed tomography (CT) scans which can find bleeding or clotting quickly, MRI provides clear pictures for complicated cases or for TIA recovery (Boulanger et al., 2021).

Individuals concerned of experiencing a stroke should undergo brain imaging within 24 hours of the onset of symptoms or last known normal. Immediate scanning is necessary for acute management and treatment decisions, particularly in cases of severe symptoms or unknown stroke onset (Xue et al., 2020). Additionally, CT or MR angiography can visualize blood vessels after injecting a dye, and swallow tests are essential for stroke patients, as swallowing difficulties can lead to aspiration and subsequent respiratory issues (Patel et al., 2020).

The global stroke fact sheet 2022 indicates that stroke ranks as the second leading cause of death globally and the third leading cause of death and disability, notably 87.0% of stroke fatalities and 89.0% of disability-adjusted life-years (DALYs) occur in lower-income and lower-middle-income countries (LMIC), underscoring considerable geographical disparities in the burden of stroke, especially in LMIC relative to developed nations (Feigin et al., 2022).

Stroke prevalence trends in the United States have been reported from 1990 to 2019, with the data being broken down by age, gender, and geographic region, there were approximately 7.09 million people living with stroke in the year 2019, of these, 4.07 million women (57.4%) and 3.02 million men (42.6%) suffered from ischemic strokes, ischemic strokes accounted for the majority of cases with 5.87 million cases (82.7%), intracerebral hemorrhages (ICHs) and subarachnoid hemorrhages (SAHs) accounted for 0.66 million and 0.85 million cases respectively (Renedo et al., 2024).

In 2021, an estimated 7,252,678 deaths were attributed to stroke, which continues to be a predominant cause of mortality and chronic disability due to its substantial impact on global health (Parry-Jones et al., 2025). Europe also faces significant stroke burdens, particularly in lower-income and lower-middle-income nations, the highest incidence rates are observed in Eastern Europe, and the overall burden has significantly escalated over the past two decades (Markus, 2022). More than one hundred thousand people in the United Kingdom suffer a stroke every single year (Sibson, 2023). Each year, the Canadian reports approximately 62,000 new cases (Baldwin, Birner and Ayarzagüena, 2024). Stroke affects approximately 795,000 people in the United States of America every single year. It is estimated that approximately 600,000 of these are initial attacks, while 185,000 are repeated attacks (Su, 2017). Similarly, Europe grapples with stroke's significant impact, with incidence rates varying widely across different nations and

regions, as revealed by data from the European Registers of Stroke (EUROS) project (Wafa et al., 2020). In the United Kingdom, over 100,000 people experience a stroke each year, equating to one stroke every five minutes (Hill and Mitchell, 2023). The Heart and Stroke Foundation of Canada highlights the fact that approximately 62,000 new cases of stroke are recorded each year in Canada, indicating that stroke is becoming an increasingly significant health concern in the country (Li et al., 2020). A nationwide German study reported that 51.2% of stroke events occurred in men, with higher admission rates for both ischemic and hemorrhagic strokes (Kelly et al., 2024). Stroke poses a significant health challenge across Asia, with varying prevalence rates influenced by demographic and socio-economic factors (Mi et al., 2023). This national survey in China reports a high incidence of first-ever stroke (229.5 per 100,000 person-years) and stroke events (300.61 per 100,000 person-years), with rural areas showing a higher incidence than urban areas (Sun et al., 2025). Japan's aging population exacerbates stroke prevalence by increasing the number of patients (Hata and Ninomiya, 2023). In Korea, the crude incidence rate of stroke was around 200 per 100,000 person-years from 2011 to 2015, peaked at 218.4 in 2019, and slightly declined to 208.0 in 2020, while age-standardized rates decreased by 25% (Moon et al., 2023). Stroke continues to be a significant global health concern, profoundly affecting India through considerable contributions to mortality and disability (Behera, Rahut and Mishra, 2024). The estimated yearly incidence of stroke in Pakistan is 250/100,000, or 350,000 cases; the majority of these cases occur in middle-aged people (Ramzi, Khurram and Manzoor, 2023). From 2000 to 2016, the crude age and sex-adjusted stroke incidence in Pakistan was 95 per 100,000 people annually, with the highest incidence occurring among men and women aged 75 to 85 (584,000 of 650,000) (Khan et al., 2019). In Sri Lanka, a population-based study indicated an overall stroke prevalence of 10.4 per 1000 individuals, with a male-to-female ratio of 2:1 (Chang, Gajasinghe and Arambepola, 2015).

The incidence of disability and mortality due to stroke is exceedingly elevated in developing countries (Sadat, Podder and Biswas, 2023). Eighty-one percent of stroke-related impairments and seventy-five percent of stroke-related deaths are attributed to developing countries around the world (Feigin et al., 2022). Stroke is a significant health concern in Bangladesh due to poor management systems and a lack of public awareness, particularly in rural areas and this has contributed to a rapid rise in stroke

incidence and associated mortality rates (Sadat, Podder and Biswas, 2023). A systematic review and meta-analysis indicated a stroke prevalence of roughly 1.8% among adults, highlighting the increasing morbidity associated with this condition, with stroke significantly impacts Bangladesh as a major health concern, contributing to high morbidity and mortality rates (Shuvo et al., 2024). Government health reports offer aggregated data on stroke-related hospital admissions and mortality, which are crucial for understanding healthcare utilization and guiding policy decisions (Mondal et al., 2022).

Stroke has a significant financial impact worldwide which highlights the urgent need for efficient management and prevention measures to lower incidence and improve outcomes for stroke patients globally through targeted public health initiatives education and better healthcare services (Markus, 2023). The estimated global cost of stroke exceeds US$890 billion annually, accounting for approximately 0.66% of the global GDP and this significant financial burden highlights the urgent need for effective stroke prevention and management strategies worldwide (Feigin et al., 2025).

Urinary tract Symptoms is common problem after stroke that negatively affects the functional status as well as quality of life of the patients (Cinar et al., 2022). After a stroke, incontinence can be caused by a variety of factors, including changes in communication and vision, as well as physical changes (Bizovičar, 2018). Women post-stroke exhibit markedly greater urinary and sexual dysfunction, alongside diminished quality of life (Schuster, Kelečić and Uglešić, 2022). Urinary tract symptoms in stroke patients commonly include urinary incontinence, urgency, increased frequency, and difficulty voiding and these symptoms result from bladder dysfunction, which significantly impacts the patient's quality of life (Agapiou et al., 2024).
Frontal lobe lesions significantly correlate with urinary incontinence post-stroke, with 82.9% of incontinent women affected. In contrast, lesions in the parietal lobe and left hemisphere are more common in continent women, indicating lesion location influences urinary symptom severity (Tonani et al., 2023).

Stroke affects neurological control of bladder function by altering brain activation patterns during volitional contractions, with significant changes in BOLD signals in specific brain regions, suggesting impaired coordination between sensory and motor pathways involved in bladder control (Gaburak et al., 2024).

In female stroke patients, the most common types of lower urinary tract symptoms observed involve nocturia, urgency, urge incontinence, and stress urinary incontinence, and these symptoms significantly impact their quality of life and those are associated with age and co-existing medical conditions (Miyazato et al., 2017).

A study found that 31% of stroke survivors experienced urinary incontinence long after the stroke event, with older age correlating with increased severity. Additionally, movement limitation significantly correlated with higher UI severity (P=0.002, d=1.05) among stroke patients (Sadeghi et al., 2023). Urinary incontinence significantly impacts health outcomes in hospitalized stroke patients, indicating higher mortality, increased disability, and a greater risk of infections across the entire spectrum of acute stroke severity, including those with milder strokes (Fry et al., 2024). Urinary incontinence is a prevalent complication among stroke survivors, prompting the exploration of novel interventions, specifically the investigation of low-frequency repeated transcranial magnetic stimulation, which significantly improved various urinary parameters in poststroke patients (Chen et al., 2024).

Nocturia is a prevalent issue among stroke patients, significantly impacting their quality of life and research indicates that the incidence of nocturia in the population can range from 15% to 96%, depending on multiple factors such as the specific neurological condition and the definitions utilized (Haddad et al., 2020).

Nocturia and urgency incontinence significantly affected quality of life, surpassing the impact of overactive bladder symptoms, including nocturia, urgency, urgency incontinence, and stress, urinary incontinence was correlated with age, female gender, and the presence of comorbid medical conditions including ischemic heart disease, hypertension, and depression, voiding symptoms such as diminished stream and straining were linked to age and physical activity following a stroke(Miyazato et al., 2017). Dysuria in stroke patients can result from various urodynamic changes, including detrusor overactivity and dyssynergia (Agapiou et al., 2024).

About 20 percent of stroke patients have problems with their bladder or urinary tract infections, a high postvoid residual (PVR) is a major risk factor for these problems which can make the patient’s recovery worse weeks after they were first hospitalized, finding it early is very important Smith and Schneider, 2020).

Urinary symptoms in female stroke patients exhibit significant variations based on age, with older women experiencing a higher incidence and severity of urinary incontinence (UI) and research indicates that age is a critical risk factor, women aged 70-79 years have an odds ratio (OR) of 1.55 for UI, while those aged 80 and above have an OR of 2.07 (Fluck et al., 2024).

Women post-stroke demonstrated markedly inferior quality of life scores relative to individuals with non-neurological conditions, signifying a substantial influence of urinary tract symptoms on their well-being (Schuster, Kelečić and Uglešić, 2022).

Urinary tract dysfunction is prevalent among stroke patients, with urinary symptoms inversely related to functional status, suggesting that these symptoms can adversely affect the physical health and independence of female stroke patients (Özcan and Özişler, 2022).

The incidence of urinary tract symptoms, particularly stress incontinence, was significantly higher in female stroke patients, while urge and terminal dribbling symptoms were more prevalent in male patients (Akkoc et al., 2019). A study report that, Urinary symptoms were observed in 80% of patients one year post-stroke, with nocturia being the most prevalent, at 3 and 12 months post-stroke, urinary incontinence was reported in 43.5% and 37.7% of patients respectively, with urge incontinence being the predominant type, among those who experienced new post-stroke urinary incontinence shortly after the event, 35% reported recovery by 12 months, conversely, 11.5% of patients who were initially free of urinary incontinence developed new incontinence by 12 months, factors predicting urinary incontinence at 12 months included older age at stroke onset, female sex, pre-stroke urinary incontinence, and the severity of the stroke (Williams et al., 2012).

Urinary symptoms in stroke patients significantly increase anxiety and depression levels, negatively impacting their mood (AĞIR, ARAS and KESKİN, 2023). Patients often experience emotional distress, which can hinder their motivation and engagement in rehabilitation activities (Funayama et al., 2024). Urinary symptoms markedly diminish the quality of life in stroke patients, augment caregiver burden and heighten dependency in daily activities, consequently impeding the rehabilitation and recovery process (AĞIR, ARAS and KESKİN, 2023).

In the context of stroke rehabilitation physical function plays a significant role in the prevention of lower urinary tract symptoms LUTS and one key preventive measure against urinary tract infections UTIs is ensuring complete bladder emptying as research suggests that positioning during voiding significantly affects bladder emptying efficiency with sitting or standing positions being more effective than lying down even in healthy individuals therefore when feasible stroke patients should be assisted into upright positions during urination to facilitate better bladder evacuation furthermore self-care practices such as proper perineal hygiene can reduce the risk of UTIs as patients capable of cleaning themselves after urination are generally less susceptible to infection and education on appropriate cleaning techniques specifically wiping from front to back is essential to minimize the risk of coliform bacterial contamination near the urinary opening (Tibaek, 2018).

Electroacupuncture (EA) is an effective treatment for urinary retention after a stroke as it significantly lowers the amount of urine left in the bladder after voiding and improves bladder function and quality of life compared to standard treatments (Zhang et al., 2024). Behavioral strategies, specialized professional advice, complementary therapies, and physical rehabilitation are all options for treating urinary incontinence after a stroke (Thomas et al., 2019).

Neurosurgical evaluation helps determine the extent of the hemorrhage and the need for surgical intervention, particularly in cases where anticoagulants are involved, although many may not need surgery (Arakaki et al., 2025). Anticoagulants, particularly warfarin, significantly increase bleeding risk in ischemic stroke patients with key parameters monitored include major and minor bleeding events, renal function, and patient demographic information, such as age and gender, to optimize treatment as well as minimize complications (Mende, Rahmawati, and Puspitasari, 2022).

Patients who have had stroke should ideally be admitted to a specialized “stroke unit” for comprehensive care (Lauritano et al., 2022). In specialized stroke units, experienced nurses and therapists provide essential clinical competence, emotional support, and collaborative care, ensuring effective rehabilitation and improved patient outcomes through ongoing training and multi-professional networking (Hyvärinen et al., 2024). Early assessment is crucial in stroke management as it enables rapid diagnosis and

differentiation between ischemic and hemorrhagic strokes, prompt identification of the stroke type allows for timely intervention, such as thrombolysis for ischemic strokes or surgical intervention for hemorrhagic strokes (Torquato et al., 2024).

Multidisciplinary stroke team rehabilitation involves collaboration among nurses, physiotherapists, occupational therapist, speech and language therapists, and rehabilitation physicians to prevent complications and educate family members, enhances survivors everyday living skills through tailored interventions, timely assessments, and patient empowerment (Persson et al., 2025).

Physiotherapy in stroke rehabilitation focuses on improving sensory function, motor learning, flexibility, strength, postural control, and gait training, it addresses specific functional limitations, promotes recovery, and enhances the use of hemiparetic extremities through tailored interventions and home exercise programs (Shahid, Kashif and Shahid, 2023). While occupational therapy helps the patients relearn activities of daily living (ADLs) (Dananjaya et al., 2024). Speech therapists in stroke rehabilitation assess and provide targeted speech, language, and swallow rehabilitation exercises (Donders-Seoighe, 2024).

Stroke rehabilitation should ideally begin within 24 hours post-stroke, as early mobilization is crucial for recovery while significant recovery often occurs within the first six months, patients can continue to regain abilities beyond this period, although the extent and rate of recovery may vary (O'Dell, 2023).

Virtual reality and video games are two examples of things that are currently being used for stroke rehabilitation and will continue to be used in the future, when it comes to getting patients to do therapy tasks these methods work better than traditional ones, more and more clinics and homes are using these technologies for exercise and socializing because they are cheap and easy to get, this makes the rehabilitation experience much better (Niknejad et al., 2021). There are new non-invasive rehabilitation techniques being developed to help stroke patients improve their motor skills including transcranial magnetic stimulation (TMS), transcranial direct-current stimulation (tDCS), and robotic therapies (Camacho-Conde et al., 2022).

Chapter-iii Methodology

3.1 Study design

A cross sectional study design was selected to execute the research. The purpose of the study was to find out urinary tract symptoms in female stroke patients and impact on their quality of life. A cross-sectional study design is efficient in terms of time as it gathers information from individuals at one particular moment, eliminating the need for follow-up and this method enables rapid evaluation of prevalence and correlations among variables, providing initial evidence for subsequent research (Zuleika and Legiran, 2022). This method is especially helpful when determining the number of cases of specific features or conditions. This study represents the most basic form of descriptive or observational epidemiology, commonly referred to as surveys. The objectives of the study were easily determined using this study design. The data were gathered in one shot or over a short period of time.

3.2 Study site

The researcher collected data from the Neurology unit of Physiotherapy Department of Centre for the Rehabilitation of Paralysed (CRP)-Savar, Dhaka-1343 for conducting the study. This place was chosen due to its appropriateness for the study and the availability of samples that met the researcher's inclusion and exclusion criteria. Patients who had experienced a stroke had come to this facility for rehabilitation from multiple parts of Bangladesh.

3.3 Duration of data collection

The phase of data collection of the study was carried out over a span of four months, beginning in January 2025 and ending in April 2025.

3.4 Study population

Study population indicates the entire group of individuals who meet the criteria on which the researchers are interested to generalize the result of the study. In this study, female stroke patients were the population whom receiving rehabilitation intervention in Neurology Unit of Centre for the Rehabilitation of the paralysed (CRP), Savar, Dhaka.

3.5 Inclusion criteria

Patients who were diagnosed with stroke by Physician.

Female stroke patients were included.

Patients who received Physiotherapy services at CRP.

Patients who were medically stable.

Patients who agreed to take part in the study.

3.6 Exclusion criteria

Patients who were in a state of medical instability.

Patients who had difficulties in speaking and hearing.

Patients diagnosed with mental disorders.

Patients diagnosed with pathological disease.

Patients who had major cognitive deficits.

Patients who were unwilling to give consent to take part in the study.

3.7 Sample size

Sample size defines the quantity of observations or individuals incorporated in a study (Stallings, 2023). Establishing an adequate sample size is essential since it affects the reliability and validity of results and an insufficient sample size may yield errors results, whereas an excessively large sample can squander resources and confound analysis (Sharma and Bhattarai, 2024). The procedure for sampling for a cross-sectional study was conducted in accordance with the equation-

$$n = \frac{z^2 pq}{d^2}$$

$$n = \frac{1.96^2 \times 0.155 \times 0.845}{0.05^2}$$

$$= 201.261$$

$$= 202$$

here,

n = Sample size

z = Confidence level. A 95% confidence level gives us Z values of 1.96

d = The desired level of precision (i.e. the margin of error). 5% = 0.05

p = expected prevalence which is 0.155 (Saha et al., 2018)

q = 1- p = (1-0.155) = 0.845

So, the required sample size (n) was approximately 202.

As it is academic thesis, self-funding and data was collected from a single specialized hospital by considering the time limitation, 105 sample were selected for the study.

3.8 Sampling technique

Sampling involves the selection of a portion from the population that is noteworthy in a research study (Turner, 2020). For this study hospital based random sampling technique was used by the researcher to extract the sample from the population. Through the sampling technique, the samples were chosen implementing a series of inclusion and exclusion criteria.

3.9 Data collection

Data was gathered by using face to face interviewing method utilizing a structured questionnaire paper. Questions about socio-demographic information, urinary tract symptoms and quality of life were all included in the questionnaire. Prior to data collection, participant's written consent was obtained. In order to ask the participants questions during the interviews, the English questionnaires were translated into Bengali. Each volunteer participant's participation was obtained by the researcher utilizing a written consent form in Bengali.

3.10 Data collection tools and materials

Researcher used the tools that needed for data collection were an information and consent form, a standard questionnaire form. And other some necessary materials that were also used are pen, pencil, eraser, and clip board.

Questionnaire

The researcher developed the questionnaire with the supervisor's guidance and approval, adhering to established protocols. It was meant to collect data regarding

urinary tract symptoms in female stroke patients and their impact on quality of life. The primary areas addressed include:

Socio-demographic information of stroke patients

It typically refers to basic personal and social characteristics of participants including age, marital status, education status, religion, residential area, occupation, family member, household monthly income.

Comorbidity and stroke related information

In this section researcher gathered details such as history of alcohol consumption and smoking, past medical history, the type of stroke, duration of stroke, number of stroke.

Urinary tract symptoms related questions

This is a self-administered urinary tract symptom related questions which includes 10 questions to find out the presence of urinary tract symptoms related to urge, urge incontinence, stress incontinence, mixed incontinence, dysuria, hesitancy, weak stream, hesitancy, incomplete emptying, frequency, nocturia. It is 2-point numerical question that graded from 0 to 1, with 0 being no symptoms and 1 being presence of symptom.

Modified Kings Health Questionnaire

Kings Health Questionnaire was used to assess the impact of urinary tract symptoms, including urinary incontinence, on quality of life among female patients with stroke. This questionnaire has 30 questions distributed in nine domains: the patients report perception of health, impact of incontinence, task performance or activity limitations, physical limitations, social limitations, personal relationships, emotions, sleep/disposition, and measures of severity. KHQ is a patient self-administered self-report and has 3 parts consisting of 21 items. Part 1 contains general health perception and incontinence impact (one item each). Part 2 contains role limitations, physical limitations, social limitations (two items each), personal relationships, emotions (three items each) and sleep/energy (two items), severity measures (four items). The responses in KHQ have four-point rating system. The KHQ is scored in each of its domains and, therefore, there is no overall score. The eight subscales (domains) scored between 0 (best) and 100 (worst). Decreases in KHQ domain scores indicate an improvement in quality of life. The higher the score, the worse the quality of life related to that domain. Numerical values are assigned to all answers, added, and evaluated by the domain.

3.11 Data analysis

The Statistical Package for the Social Science (SPSS) version 25 software was utilized in order to perform the analysis of the data. The researcher inputted the name of the variables and delineated their types, values, decimal, label alignment and data measurement level of the data in the variable view of SPSS first. The SPSS data view input was the following stage. Following the completion of data entry to confirm the all information had been precisely transferred from the questionnaire form to the SPSS data view, the researcher double-checked the inputted data. The raw data were then ready to be analyzed in SPSS. Data were analyzed using descriptive statistics, calculated as percentages, and presented through tables, bar charts, column charts, and pie charts. Microsoft Office Excel 12 was utilized for embellishing column charts, bar charts, and pie charts. This study collected a substantial amount of information.

3.12 Ethical consideration

The research proposal was approved by the Institutional Review Board of Bangladesh Health Professions Institute (BHPI). The World Health Organization (WHO) and the Bangladesh Medical Research Council (BMRC) established guidelines that were adhered to in the research. Once more Permission has been obtained from the head of the physiotherapy department prior to data collection. Before the data collection, participants gave their verbal or written consent. Throughout the research, the participants were verbally notified of the study's objectives as well as consent form and they signed the consent form. The research had no negative effects on their employment. They were notified that their participation in the study was completely voluntary and that they could terminate or withdrawal at any time. Additionally, they received assurances that the privacy of their personal data would be maintained. Participants should be guaranteed that their address and name will remain anonymous. The participants were also assured they would not be harmed by the study's conclusions.

3.13 Informed consent

Before conducting the interview, all participants were provided with written consent forms (appendix). The researcher outlined the participant’s role in the study, including its aim and objectives. The researcher obtained written consent from each participant. The participants asserted their awareness of the consent and that their involvement in the procedure was wholly voluntary. Participants received reassurance that the confidentiality of their personal information would be maintained. Participants in the research were assured by the researchers that their involvement would not result in any adverse consequences. Given the rationale, although the study's participants may not immediately benefit, it could prove advantageous for similar circumstances in the future. Individuals possessed participants may revoke their consent and discontinue participation at any time, without affecting their present or future treatment at CRP’s neurology section. To ensure security, the data was evaluated anonymously, and no publication presenting the study's findings contained any personal information.

Chapter-iv Results

Data were analyzed using descriptive statistics, and the results were computed as percentages. The results were presented using column charts, bar charts, pie charts and tables.

4.1 Socio-demographic information

4.1.1 Age groups of individuals involved

105 female patients who had suffered a stroke were chosen for the study. Among them 7.6% (n=8) of participants were 31-40 years, 21.9% (n=23) of participants were 41-50, 39% (n=41) of participants were 51-60 years, 23.8% (n=25) of participants were 61-70 years, 7.6% (n=8) of participants were 71-80 years. The participants' ages varied from 37 to 75 years.

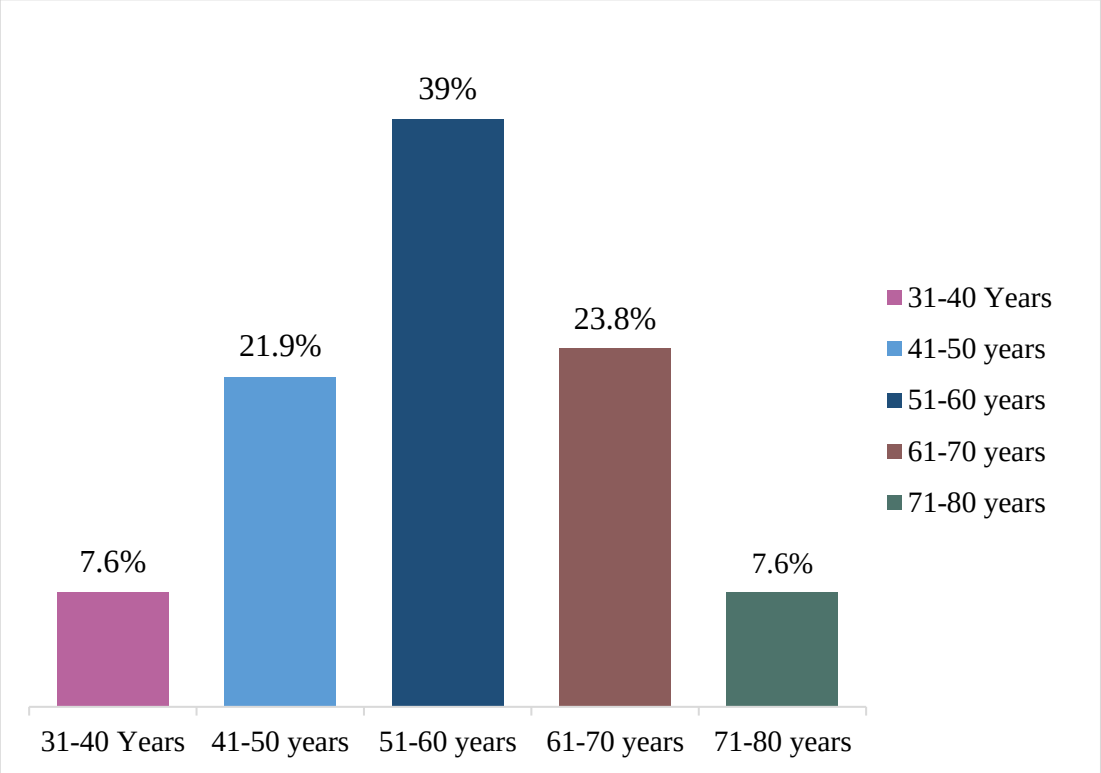


Figure - 1: Age groups of individuals involved

4.1.2 Marital status of the individuals involved

Of all the individuals involved (n=105), it was found that 91.4% (n=96) of the participants were married, 1% (n=1) of the participant was divorced while 7.6% (n=8) of the participants were a widow.

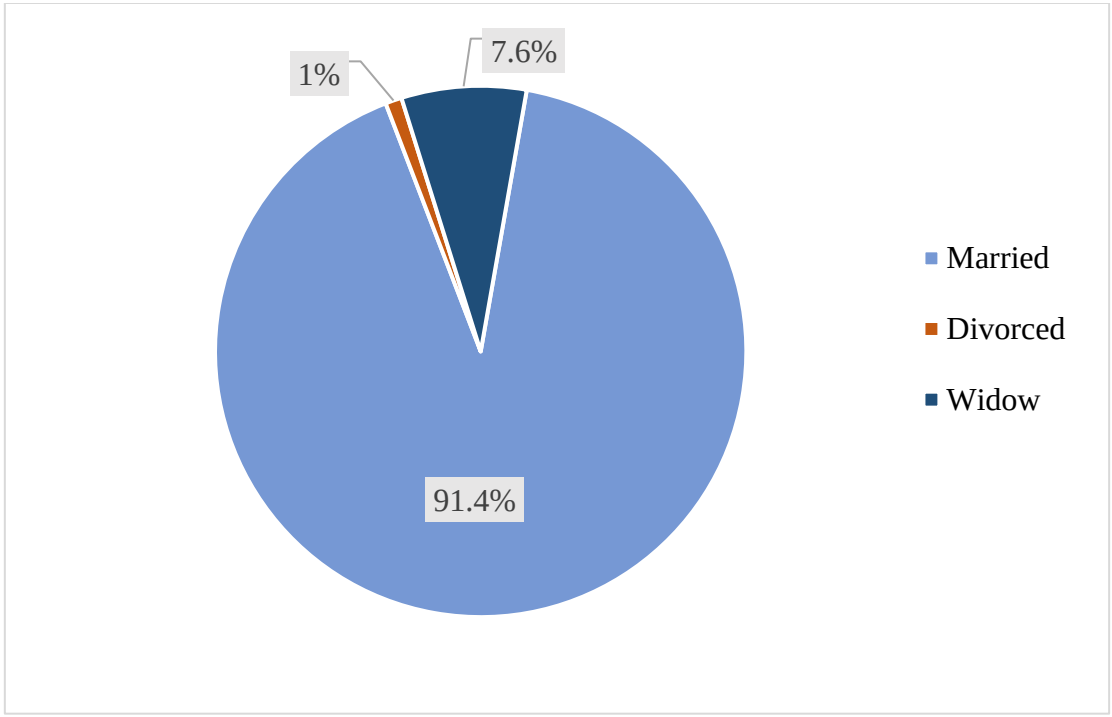


Figure - 2: Marital status of the individuals involved

4.1.3 Educational status of the individuals involved

Out of the105 participants, educational status showed that 9.5% (n=10) of participants had no formal education, 41.9% (n=44) of the participants completed primary education, 34.3% (n=36) of the participants completed secondary education, 8.6% (n=9) of participants completed higher secondary and 5.7% (n=6) of participants graduate completed or above.

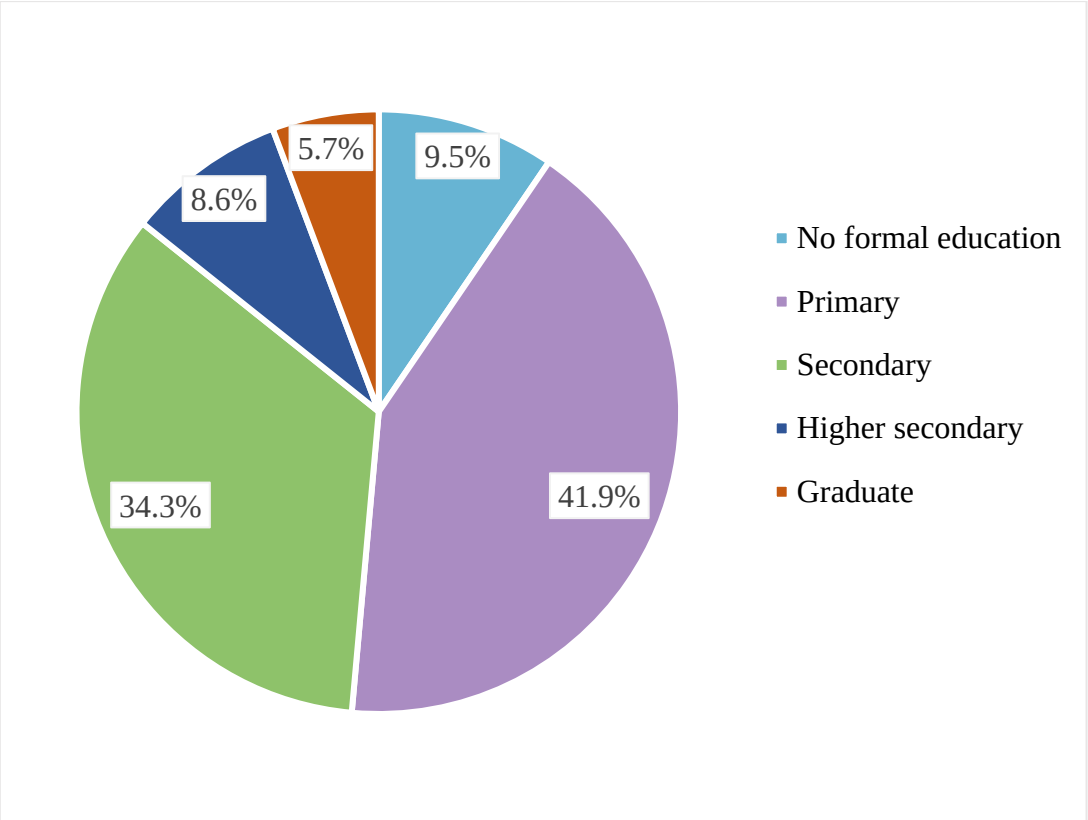


Figure - 3: Educational status of the individuals involved

4.1.4 Religion of the participants

Among all of the individuals involved (n=105), it was found that 89.5% (n=94) of participant's religion was Islam, 8.6% (n=9) of participant's religion was Hinduism and 1.9% (n=2) of participant's religion was Christianity.

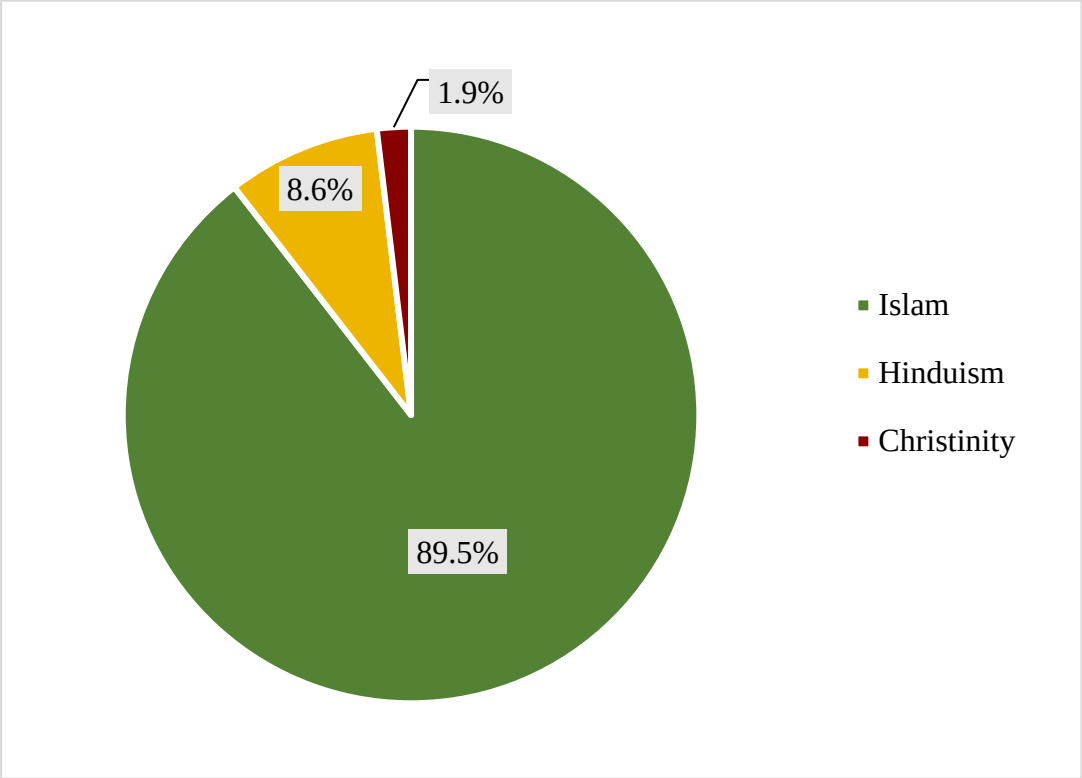


Figure - 4: Religion of the participants

4.1.5 Residential area of the participants

Among all of the participants (n=105), it was found that 41% (n=43) of participants resided in rural, 49.5% (n=52) of the participants resided in urban and 9.5% (n=10) of participants liv resided in semiurban areas.

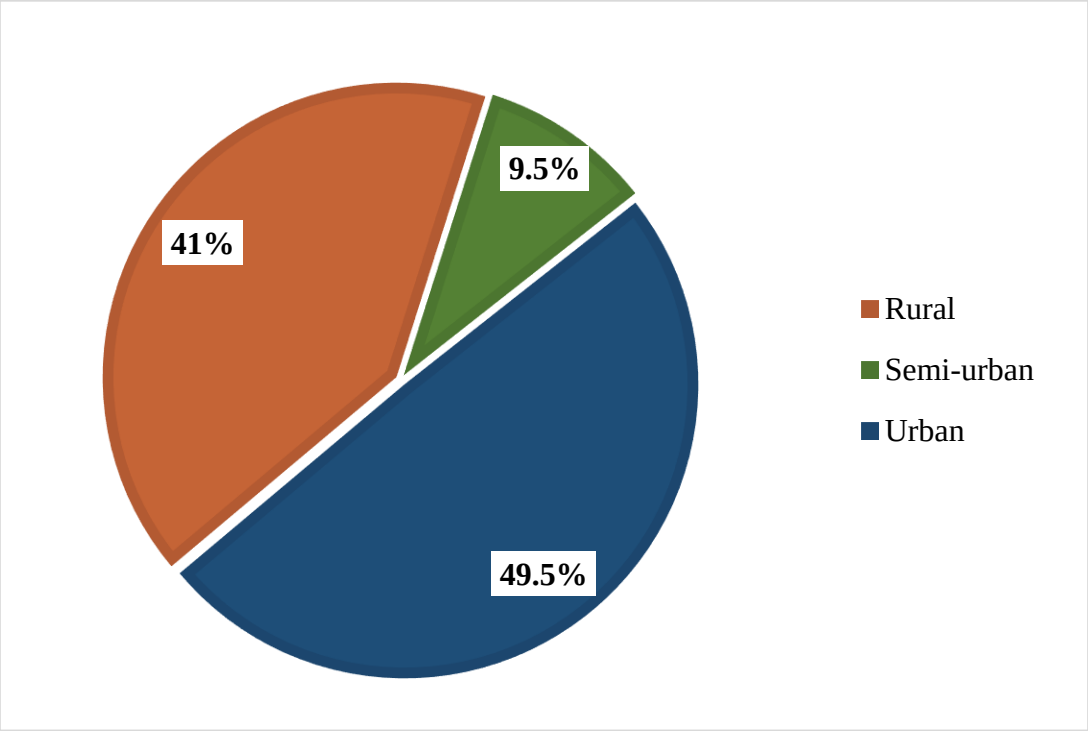


Figure - 5: Residential area of the participants

4.1.6 Occupation of the participants

Among 105 participants a highest number of respondents 96.2% (n=101) of found those were housewife, 3.8% (n=4) of participants were service holder.

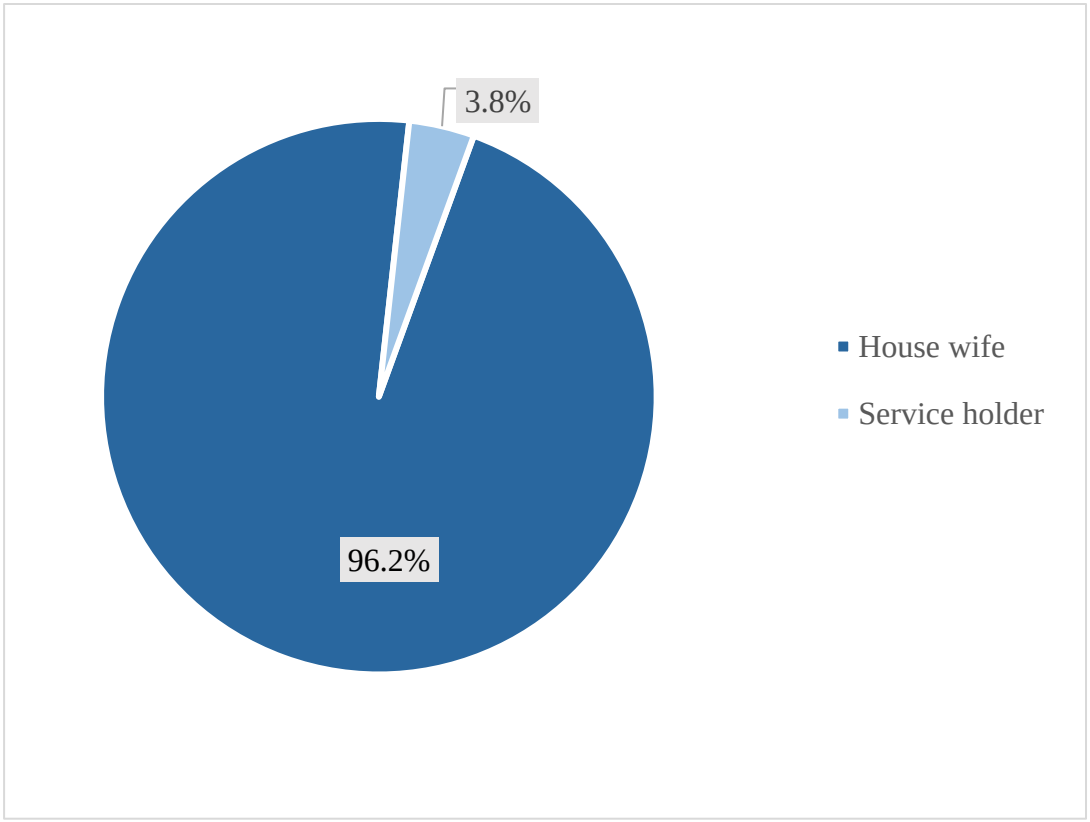


Figure - 6: Occupation of the participants

4.1.7 Family member

In this study it was found that 2.9% (n=3) of the participant's family member were 1-2, 70% (n=74) of the participant's family member were 3-5 and 26.7% (n=28) of participant's family member were more than 5.

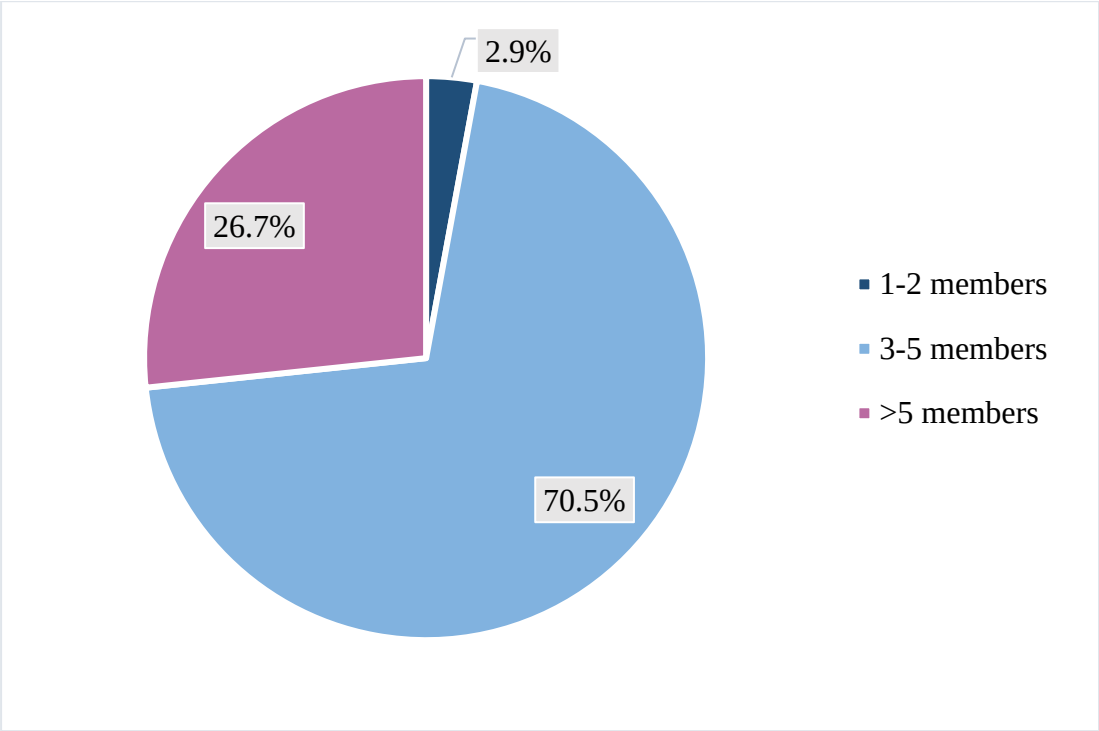


Figure - 7: Number of family member

4.1.8 Monthly income of the family

The result shows that the monthly income of the participants. 16.2% (n=17) of participant's monthly income were between 0-15000 BDT, 48.6% (n=51) of participant's monthly income were between 16000 BDT and 35.2% (n=12) of participant's monthly income were above 30000 BDT.

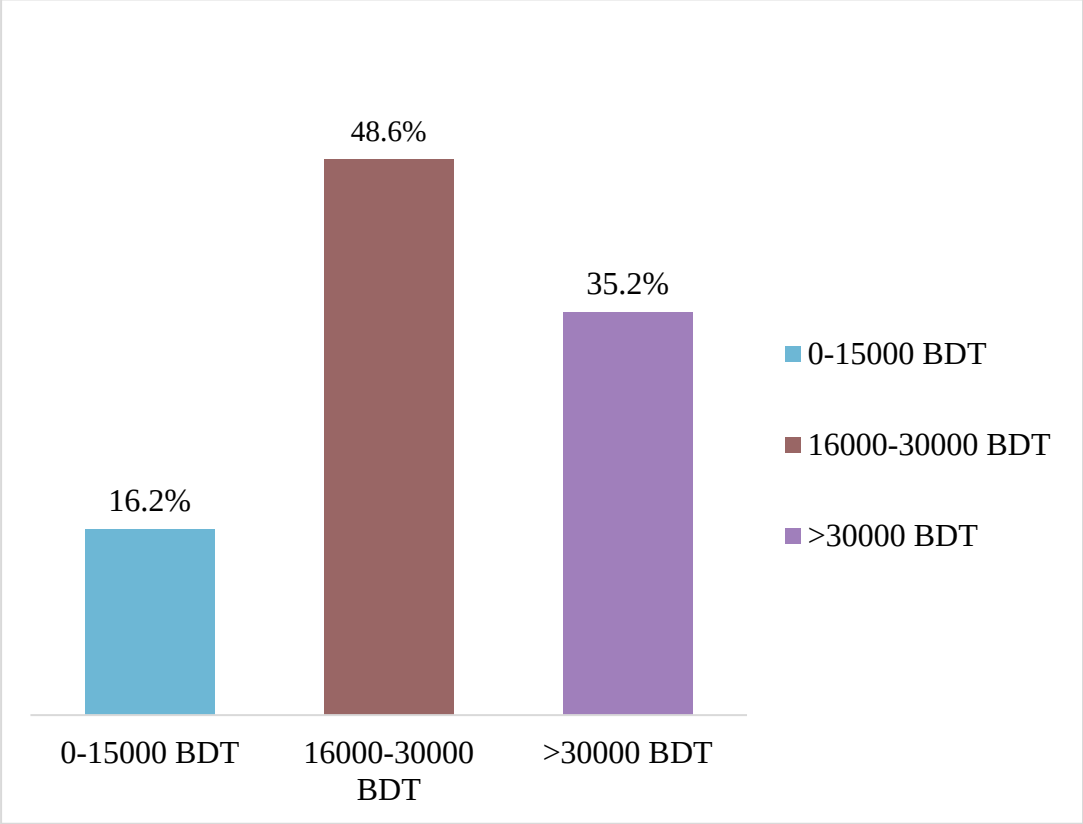


Figure - 8: Monthly income of the family

4.2 Comorbidity and stroke related information

4.2.1 Smoking and alcohol history

Table - 1: Smoking and alcohol history

Variables	Categories	Number of the participants	Percentage
Smoking history	Yes	0	0%
	No	105	100%
Alcohol history	Yes	0	0%
	No	105	100%

In this study, none of the participants (0%) reported a history of smoking. Similarly, regarding alcohol consumption, all participants (100%, n = 100) reported no history of alcohol consumption.

4.2.2 Past medical information

Out of all participants (n=105), 41.9% (n=44) of the participants had hypertension, 2.9% (n=3) of participants had diabetes mellitus, 40% (n=42) of the participants had two complications and 15.2% (n=16) of the participants had three complications or above.

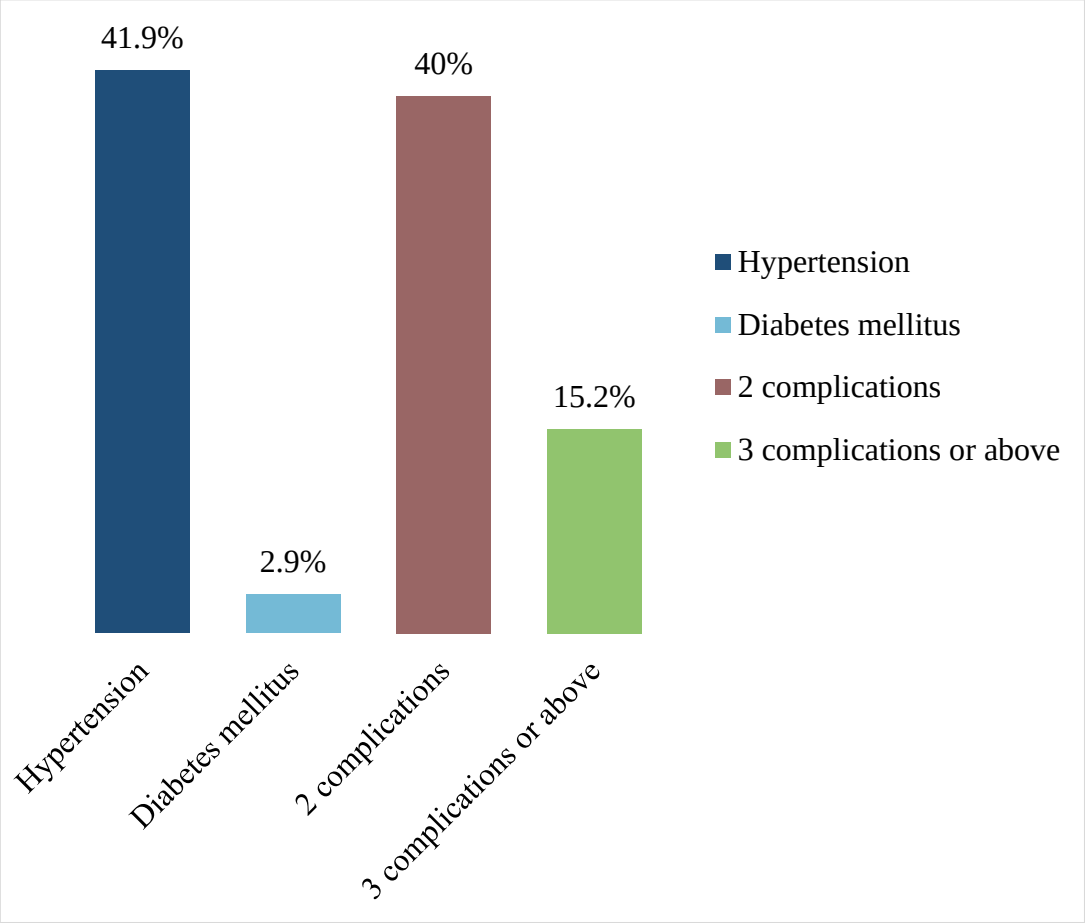


Figure – 9: Past medical history

4.2.3 Type of stroke

Among the participants, 73.3% (n=77) of participants had an ischemic stroke, and 26.7% (n=28) of participants had suffered a hemorrhagic stroke.

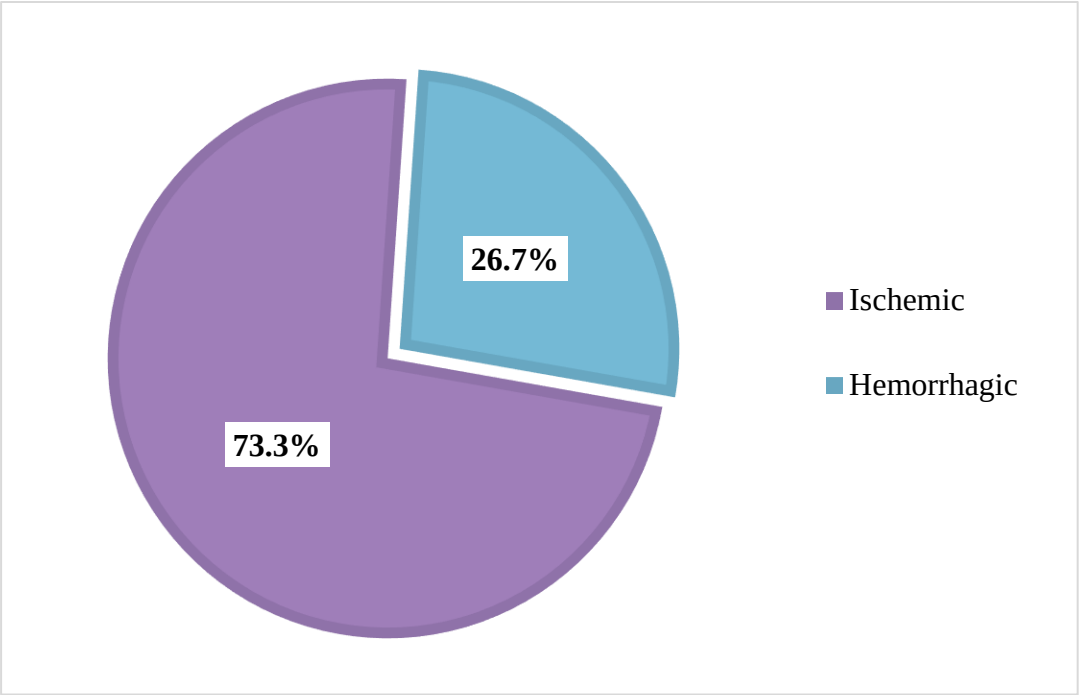


Figure – 10: Type of stroke

4.2.4 Duration of stroke

This column chart shows that, among the 105 participants, 48.6%, (n = 51) of the participants were got stroke more than 6 months. Additionally, 30.5% (n = 32) of the participants were got stroke 4-6 months ago and 21% (n=22) of participants were got stroke 1-3 month ago.

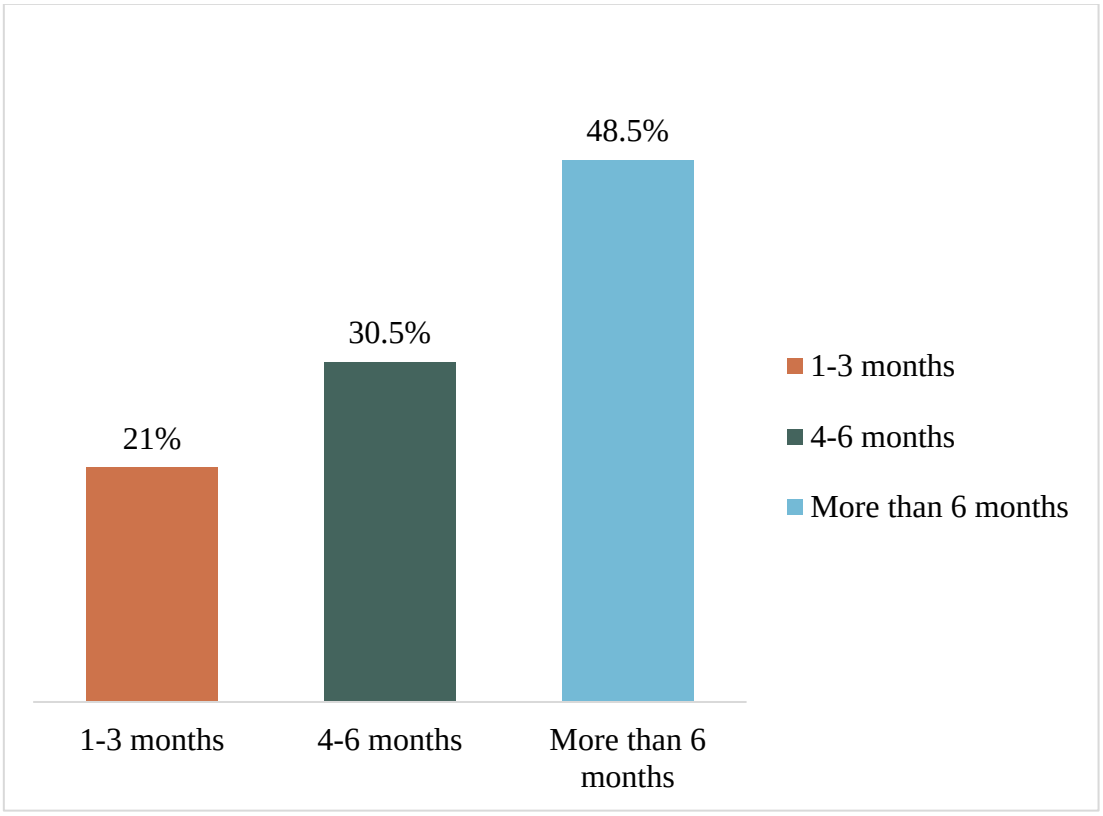


Figure - 11: Duration of stroke

4.2.5 Number of times of stroke

Among the participants, the largest proportion of participants 69.5% (n=73) experienced stroke for the first time. On the other hand, 21.9% (n=23) of the participants had second time stroke and only 8.6% (n=9) of individuals suffered stroke for the third time.

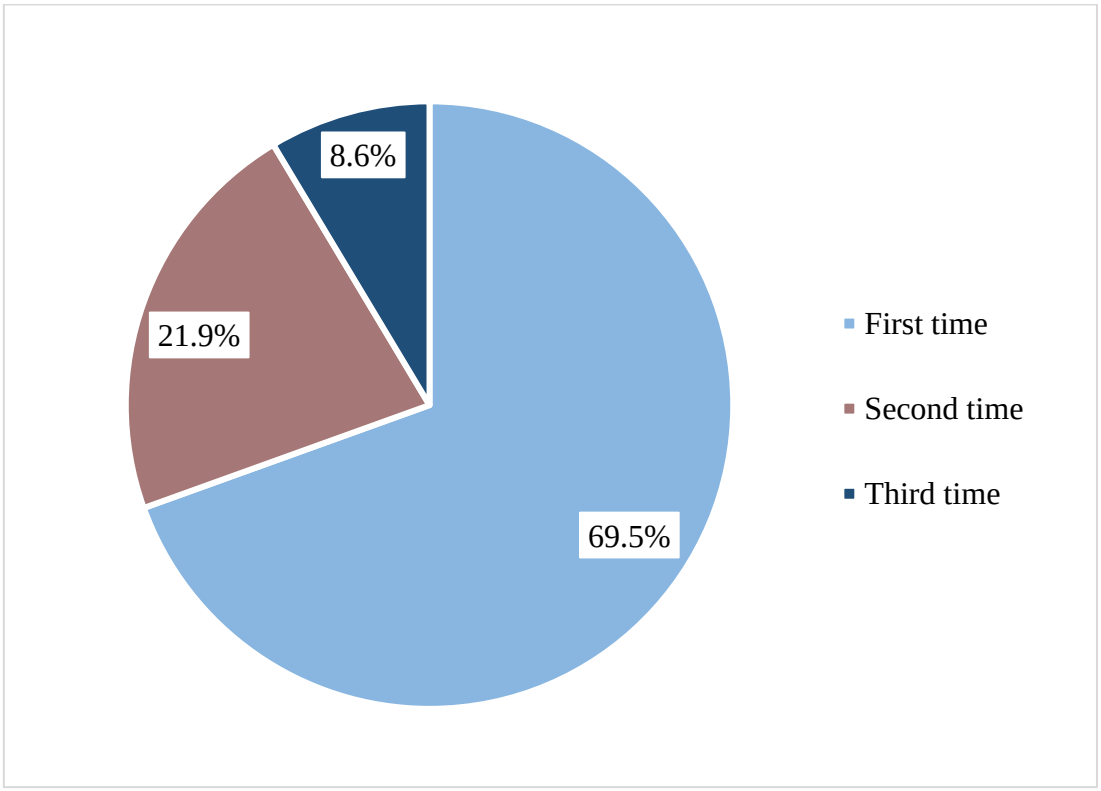


Figure - 12: Number of times of stroke

4.3 Urinary tract symptoms analysis

Table-2 Urinary tract symptoms

Urinary symptoms	Yes n (%)	No n (%)
Urge	60 (57.1)	45 (42.9)
Urge incontinence	61 (58.1)	44 (41.9)
Stress incontinence	70 (66.7)	35 (33.3)
Mixed incontinence	45 (42.9)	60 (57.1)
Dysuria	30 (28.6)	75 (71.4)
Hesitancy	27 (25.7)	78 (74.3)
Weak stream	32 (30.5)	73 (69.5)
Incomplete emptying	37 (35.2)	68 (64.8)
Frequency	49 (46.7)	56 (53.3)
Nocturia	61 (58.1)	44 (41.9)

Above table-2 shows that the urinary tract symptoms of female patients with stroke, 66.7% (n=70) of participants experienced stress incontinence, 58.1% (n=61) of participants experienced urge incontinence and nocturia was experienced by 58.1% (n=61) of participants, 57.1% (n=60) of participants had urge, 46.7% (n=49) of participants experienced urinary frequency, 42.9% (n=45) of participants reported mixed incontinence. Additionally, 35.2% (n=37) of participants experienced incomplete bladder emptying, 30.5% (n=32) of participants experienced weak stream and 28.6% (n=30) of participants experienced dysuria. Only 28.6% (n=30) of participants reported dysuria and 25.7 % (n=27) of participants had hesitancy.

4.4 Impact of urinary tract symptoms on quality of life

Table- 3: Impact of urinary tract symptoms on quality of life

Domain	Mean	Standard deviation
General health perception	60.05	±16.459
Incontinence impact	39.82	±30.292
Role limitation	27.82	±26.025
Physical limitation	26.84	±25.339
Social limitation	35.30	±27.048
Personal relationship	20.29	±19.701
Emotions	39.15	±28.622
Sleep/Energy	26.54	±24.332
Severity measure	33.82	±25.945

Above table- 3 shows that the impact of urinary tract symptoms on quality of life among the participants. The mean±SD of general health perception was 60.05±16.459. The mean±SD of incontinence impact was 39.82±30.292. The mean±SD of role limitation was 27.82±26.025. The mean±SD of physical limitation was 26.84±25.339. The mean±SD of social limitation was 35.30±27.048. The mean±SD of personal relationship was 20.29±19.701. The mean±SD of emotions was 39.15±28.622. The mean±SD of sleep/energy was 26.54±24.332. The mean±SD of severity measure was 33.82±25.945. The highest mean score was observed in the general health perception domain and the lowest impact score was observed in the personal relationship domain.

Chapter-v Discussion

In this study, 105 female patients with stroke were selected. The age range of the participants were 37-75 years. 7.6% (n=8) of participants were 31-40 years, 21.9% (n=23) of participants were 41-50, 39% (n=41) of participants were 51-60 years, 23.8% (n=25) of participants were 61-70 years, 7.6% (n=8) of participants were 71-80 years. The highest number 39% (n=41) of the participants were aged between 51-60 years. A nationwide population-based survey in Bangladesh by Mondel et al. (2022), 59.4% of respondents were younger than 40 years of age, subsequently, 19.6% of participants belonged to the 41–50 age group, 12.3% of participants to the 51–60 age group, and 8.7% of participants to the over 60 age group. The age range was from 25 to 113 years. The lowest age range had been nearly similar to this study but the maximum age range differed from this study.

In this study, 91.4% (n=96) of the participants were married, 1% (n=1) of the participant was divorced and 7.6% (n=8) of the participants were a widow. While another study found 89% of participants were married which was similar to this study (Bonner et al., 2016).

Out of the 105 female patient with stroke, educational status showed that 9.5% (n=10) participants had no formal education, 41.9% (n=44) of the participants completed primary education, 34.3% (n=36) of the participants completed secondary education, 8.6% (n=9) of the participants completed higher secondary and 5.7% (n=6) participants completed graduation completed or above. According to Mamin et al. (2017), 5.8% of participants had no formal education, followed by 16.5% of the participants completed primary education, 17.5%, of the participants completed secondary education, 5.8%, of participants completed higher secondary, 54.4% of participants completed third level education and above. The portion of no formal education and higher secondary were similar to this study but secondary education and third level education were dissimilar. Another study found that 9% of respondents had a university-level education which was similar to this study **(**Dabilgou et al., 2021).

The result showed that 49.5% (n=52) of the participants lived in urban areas, followed by 41% (n=43) of participants resided in rural areas and 9.5% (n=10) of the participants resided in semi-urban areas. A survey showed 58.9% of participants resided in urban

area and 41.1% of participants resided in rural area which was similar to this study (Mondal et al., 2022). Another study found that 68% of participants residential area was urban, followed by 22.2% of participants residential area was sub urban, 7.8% of participants residential area was village. The part of urban area was similar but the part of sub urban and village were not similar (Mamin et al., 2017).

Among the 105 participants, the overwhelming number of respondents 96.2% (n = 101) were housewife, while 3.8% (n = 4) of participants were service holders. A study by Mamin et al. (2017) found that 66% of participants were employed, followed by 6.8% of participants were self-employed, 3.9% of participants were farmer, 3.9% of participants were unemployed, 2.9% of participants were retied. The highest number of participants occupational status was employee which was not similar to this study.

None of the participants (0%) reported a history of smoking. Similarly, none of participants reported alcohol consumption. A Bangladeshi study by Bhowmik et al. (2016) discovered 2.1% of female stroke patient had a story of smoking and the result was similar to this study.

There were 41.9% (n=44) of participants with hypertension, 2.9% (n=3) of participants with diabetes mellitus, 40% (n=42) of participants with two complications, and 15.2% (n=16) of participants with three or more complications. Mondel et al. (2022) found that hypertension was the most common factor which was similar to this study.

In this study, 73.3% of the participants had ischemic stroke, while 26.7% of the participants had hemorrhagic stroke that was similar to the findings of Leasure et al. (2022), ischemic stroke was more common at 67.5%, with hemorrhagic strokes making up 32.5%. Similarly, another study discovered that 65.4% of the participants had an ischemic stroke (Abdu, Tadese, and Seyoum, 2021).

48.6%, (n = 51) of participants had experienced stroke more than 6 months. Additionally, 30.5% (n = 32) of participants were got stroke 4-6 months ago and 21% (n=22) were got stroke 1-3 month ago. 69.5% (n=73) participants experienced stroke for the first time, 21.9% (n=23) had second time stroke and only 8.6% (n=9) suffered stroke for the third time. Similarly, a study found that 13.9% respondents had 2 times stroke, followed by 3 times stroke (2.6%) **(**Dabilgou et al., 2021).

Among all of the participants, stress incontinence was the most commonly reported symptom. 66.7% (n=70) of the participants experienced stress incontinence, followed by 58.1% (n=61) of participants reported urge incontinence, 58.1% (n=61) of the participants experienced nocturia, 57.1% (n=60) of the participants faced urge, 42.9% (n=45) of the participants reported mixed urinary incontinence, 46.7% (n=49) of the participants reported frequency and 35.2% (n=35) of the participants experienced incomplete emptying. Competitively, lower rates were noted for some symptoms. Dysuria was faced by 28.6% (n=30) of the participants. Hesitancy was faced by 25.7% (n=27) of the participants and weak stream was faced by 30.5% (n=30) of the participants. Similarly, a study by Moussa et al. (2020), 76% respondents had nocturia, followed by 70% of the participants faced urgency, daytime frequency was faced by 59% of the patients, with urinary incontinence (UI) affecting 40–60% of the participants. Although nocturia was commonly reported as the most frequent symptom, stress incontinence was the most prevalent symptom in this study. According to another study, the most common symptom among men who had had a stroke was urgency 90%, followed by nocturia was faced by 87% of the participants, incomplete emptying was faced by 84%of patients, and daytime frequency was reported by 85% of participants. These findings were dissimilar to this study (Pyo et al., 2017).

The result of Kings Health Questionnaire shows that the impact of urinary tract symptoms among the participants. The mean±SD of general health perception was 60.05±16.459. The mean±SD of incontinence impact was 39.82±30.292. The mean±SD of role limitation was 27.82±26.025. The mean±SD of physical limitation was 26.84±25.339. The mean±SD of social limitation was 35.30±27.048. The mean±SD of personal relationship was 20.29±19.701. The mean±SD of emotions was 39.15±28.622. The mean±SD of sleep/energy was 26.54±24.332. The mean±SD of severity measure was 33.82±25.945. The highest mean score was observed in the general health perception domain and the lowest impact score was observed in the personal relationship domain. Since this type of research was limited, it had been compared with another neurological condition. According to Karapolat et al. (2018), in case of multiple sclerosis the mean±SD of general health perception was 48.3±21.1. The mean±SD of incontinence impact was 43.6±39.3. The mean±SD of role limitation was 43.6±39.3. The mean±SD of physical limitation was 49.2±38.4. The mean±SD of social limitation was 25.1±27.7. The mean±SD of personal relationship was 24.3±24.5. The mean±SD

of emotions was 37.0±34.0The mean±SD of sleep/energy was 34.8±35.4. The mean±SD of severity measure was 35.9±27.9. General health perception, incontinence impact, personal relationships, emotions, sleep/energy and severity measures were nearly similar to this study but role limitations, physical limitations, social limitations were dissimilar. A study showed statistically significant association between urinary tract symptoms and its impact on quality of life including personal relationships, social activities, sleep, and role limitations (Bizovičar, 2018). These findings were similar to this study. Another study showed that nocturia has a negative impact on quality of life, which is consistent with the findings of this study (Miyazato et al., 2017). A study showed that people who had urinary incontinence felt embarrassed in social situations and had mental health problems an those with more severe symptoms reported having lower quality of life scores (Mahfoudi et al., 2024). These findings were similar to this study. Another study found that there was a significant impact between having lower urinary tract symptoms (LUTS) and the problems they caused, and the quality of life (QoL) outcomes got a lot better which was also similar to this study (Soler et al., 2019). These findings were also similar to this study.

5.1 Limitations

Every research study inevitably faces limitations, as achieving complete accuracy was inherently challenging. This research project encountered several limitations and barriers that may have influenced the accuracy of its findings.

Firstly, the samples were exclusively obtained from patients at the Centre for the Rehabilitation of the Paralysed (CRP) in Savar, and the small number of participants constrains the generalizability of the findings to the broader stroke populations in Bangladesh.

Additionally, there was a scarcity of available evidence within the Bangladeshi context to support and compare the study outcomes. The use of hospital-based random sampling further limited the representativeness of the broader stroke-affected population. The research had a restricted timeframe which potentially leading to limitations in research techniques and practical aspects.

Moreover, an undergraduate student contributed to the research project, which was her very first attempt at conducting research. When it came to the practical aspects of research, the researcher had a limited amount of experience with various techniques and strategies. Due to the fact that this was the first survey that the researcher created, it is conceivable that certain errors went unnoticed by the supervisor and the esteemed instructor.

Chapter-vi Conclusion and recommendations

6.1 Conclusion

The researcher explored the urinary tract symptoms of female patients with stroke and the impact of urinary tract symptoms on quality of life.

Female patient who had suffered a stroke frequently experienced a variety of urinary symptoms in this study. The most common of urinary tract symptoms were nocturia, urge incontinence, and stress incontinence. Urinary frequency, mixed incontinence, incomplete bladder emptying, and difficulty urinating were some of the other issues that were frequently reported by patients. This finding highlights the importance of conducting a comprehensive assessment and management of urinary symptoms during the rehabilitation process for stroke patients.

The researcher in this study found that urinary tract symptoms related problems in female stroke patients had various impacts on different parts of their quality of life. The domains that were most affected were general health perception and emotional well-being, which shows that the overall well-being was affected more broadly. On the other hand, the personal relationships experienced the least impact. Other domains, such as urinary severity measures, also moderately impacted various aspects of physical limitations, social limitations, and role limitations, sleep/energy, and personal relationships among all participants. The findings underscore the extensive and multifaceted impact of urinary symptoms, highlighting the necessity for thorough evaluation and specific interventions to enhance the overall quality of life in this demographic.

Urinary tract symptoms are treatable, it is extremely crucial that efforts be made to provide early identification and support in order to assist this large proportion of patients in optimizing rehabilitation. Early and effective assessment, diagnosis, treatment, counselling and stroke rehabilitation may give them proper physical and mental strength to stand urinary tract symptoms in female patients with stroke and ease the way of getting best possible functional outcomes during rehabilitation and improving quality of life.

6.2 Recommendations

The purpose of the research project was to find out the urinary tract symptoms in female stroke patients and their impact on quality of life. Considering the study's limitations, the researchers have identified several recommendations to enhance the efficacy of subsequent research. The following are the main recommendation:

Future studies should consider conducting research over a long duration compared to the relatively short duration of this study. Moreover, it is advised to increase the sample size above the 105 participants in this study in order to get more accurate results that can be applied to a larger population.

In addition, it is recommended that future studies include to find out the characteristics of urinary tract symptoms in stroke patient, to find out the severity of urinary tract symptoms in stroke patients, to find out the association between urinary tract symptoms and quality of life. To achieve a successful and effective outcome in a generalized context, alternative scales for measurement should be considered.

In this study, the investigator only used female patients with stroke from one hospital in Savar as a sample for the study. As a result, the investigators strongly recommended that future studies include all stroke patients including males from across Bangladesh in order to ensure the study's generalizability.

References

Agapiou, E., Pyrgelis, E.S., Mavridis, I.N., Meliou, M. & Wimalachandra, W.S.B. (2024), 'Bladder dysfunction following stroke: An updated review on diagnosis and management', *Bladder, 11*(1), p.e21200005.

Agianto, A., Yulise, B., Agustina, R. & Rizany, I. (2023), 'Identification Risk Factors of Stroke: Literature Review', *Berkala Kedokteran, 18*(2), pp.233-250.

AĞIR, H., ARAS, M. & KESKİN, E.D. (2023) 'The Effect of Lower Urinary Tract Dysfunction on Quality of Life and Caregiver Burden in Stroke Patients', *Journal of Physical Medicine & Rehabilitation Sciences, 26*(2).

Akkoç, Y., Bardak, A.N., Ersöz, M., Yılmaz, B., Yıldız, N., Erhan, B., Tunç, H., Koklu, K., Alemdaroğlu, E., Dogan, A. & Ozisler, Z. (2019), 'Post-stroke lower urinary system dysfunction and its relation with functional and mental status: a multicenter cross-sectional study', *Topics in Stroke Rehabilitation, 26*(2), pp.136-141.

Anita, A. & Zoran, A. (2019), 'Acute Ischemic or Hemorrhagic Stroke Syndromes', *Fungal Infections of the Central Nervous System: Pathogens, Diagnosis, and Management*, pp.335-343.

Arakaki, Y., Yoshimura, S., Toyoda, K., Sonoda, K., Wada, S., Nakai, M., Nakahara, J., Shiozawa, M., Koge, J., Ishigami, A. & Miwa, K. (2025), 'Stroke severity and outcomes in patients with intracerebral hemorrhage on anticoagulants and antiplatelet agents: an analysis from the Japan Stroke Data Bank', *International Journal of Stroke, 20*(2), pp.166-174.

Arias-Gómez, J., Villasís-Keever, M.Á. & Miranda-Novales, M.G. (2016), 'The research protocol III. Study population', *Revista Alergia Mexico (Tecamachalco, Puebla, Mexico: 1993), 63*(2), pp.201-206.

Baldwin, M.P., Birner, T. & Ayarzagüena, B. (2024), 'Tropospheric amplification of stratosphere–troposphere coupling', *Quarterly Journal of the Royal Meteorological Society, 150*(765), pp.5188-5205.

Behera, D.K., Rahut, D.B. & Mishra, S. (2024), 'Analyzing stroke burden and risk factors in India using data from the Global Burden of Disease Study', *Scientific Reports*, *14*(1), p.22640.

Bhowmik, N.B., Abbas, A., Saifuddin, M., Islam, M.R., Habib, R., Rahman, A., Haque, M.A., Hassan, Z. & Wasay, M. (2016), 'Ischemic strokes: observations from a hospital-based stroke registry in Bangladesh', *Stroke research and treatment*, *2016*(1), p.5610797.

Biffi, A. (2018), 'Risk factors for hemorrhagic stroke', *Stroke Revisited: Hemorrhagic Stroke*, pp.7-25.

Bizovičar, N. (2018), 'Managing of lower urinary tract dysfunction following stroke', *Current Bladder Dysfunction Reports*, *13*, pp.125-131.

Bolaños, C.E.D., Vasquez, E.D.S., Peralvo, S.M.H., Molano, L.C.P., Espinoza, M.A.A. & Gómez, E.Y.P. (2024), 'Application of Advanced Neuroimaging Techniques in Early Detection and Prognostic Evaluation of Stroke-New Trends and Technological Developments: A Systematic Review & Meta-analysis', *Arandu UTIC*, *11*(2), pp.821-840.

Bond, V.E., Doeltgen, S., Kleinig, T. & Murray, J. (2023), 'Dysphagia-related acute stroke complications: a retrospective observational cohort study', *Journal of Stroke and Cerebrovascular Diseases*, *32*(6), p.107123.

Bonner, B., Pillai, R., Sarma, P.S., Lipska, K.J., Pandian, J. and Sylaja, P.N. (2016), 'Factors predictive of return to work after stroke in patients with mild−moderate disability in India', *European journal of neurology*, *23*(3), pp.548-553.

Boulanger, C., Ingicco, T., Sémah, A.M., Hawkins, S., Ono, R., Reyes, M.C. and Pawlik, A., 2023. 30,000 years of fishing in the Philippines: New ichthyoarchaeological investigations in Occidental Mindoro. *Journal of Archaeological Science: Reports*, *52*, p.104222.

Camacho-Conde, J.A., Gonzalez-Bermudez, M.D.R., Carretero-Rey, M. & Khan, Z.U. (2022), 'Brain stimulation: a therapeutic approach for the treatment of neurological disorders', *CNS Neuroscience & Therapeutics*, *28*(1), pp.5-18.

Chang, T., Gajasinghe, S. & Arambepola, C. (2015), 'Prevalence of stroke and its risk factors in urban Sri Lanka: population-based study', *Stroke*, *46*(10), pp.2965-2968.

Chen, J., Tan, B., Chen, Y., Song, Y., Li, L., Yu, L., Feng, Y., Zhou, Y. & Jiang, W. (2024), 'A randomized controlled trial of low-frequency repeated transcranial magnetic stimulation in patients with poststroke neurogenic bladder', *Scientific Reports*, *14*(1), p.18404.

Cinar, C., Ones, K., Bardak, A.N., Yıldırım, M.A. & Bagatir, N. (2022), 'The Evaluation of Neurogenic Lower Urinary Tract Dysfunction in Stroke Patients', *Muğla Sıtkı Koçman Üniversitesi Tıp Dergisi*, *9*(2), pp.102-108.

Dabilgou, A.A., Dravé, A., Kyelem, J.M.A., Zoungrana, R., Napon, C., Millogo, A. & Kaboré, J. (2021), 'Frequency of recurrent stroke in Burkina Faso: an observational hospital based study of 6 months', *Pan African Medical Journal*, *40*(1).

Dananjaya, I.M.D., Silakarma, D. & Dewi, M.Y.A. (2024), 'Efficacy of motor relearning programme on rehabilitation of upper extremity function in stroke patients', *Intisari Sains Medis*, *15*(1), pp.25-29.

Diontama, M.A., Larasati, T.A. & Jausal, A.N. (2025), 'Article Review: Peran Hipertensi terhadap Patomekanisme Stroke Iskemik dan Hemoragik', *Termometer: Jurnal Ilmiah Ilmu Kesehatan dan Kedokteran*, *3*(1), pp.183-191.

Donders-Seoighe, C. (2024), 'An Innovative Approach To Increasing Speech And Language Therapy Intensity For Stroke Patients', *Age and Ageing*, *53*(Supplement_4), pp.afae178-173.

Ekker, M.S., Verhoeven, J.I., Vaartjes, I., Jolink, W.M.T., Klijn, C.J.M. & de Leeuw, F.E. (2019), 'Association of stroke among adults aged 18 to 49 years with long-term mortality', *Jama*, *321*(21), pp.2113-2123.

Etminan, M., Brophy, J. M., Collins, G., Nazemipour, M., & Mansournia, M. A. (2021), 'To adjust or not to adjust: the role of different covariates in cardiovascular observational studies', *American Heart Journal*, 237, 62-67.

Feigin, V.L., Brainin, M., Norrving, B., Martins, S., Sacco, R.L., Hacke, W., Fisher, M., Pandian, J. & Lindsay, P. (2022), 'World Stroke Organization (WSO): global stroke fact sheet 2022', *International Journal of Stroke*, *17*(1), pp.18-29.

Feigin, V.L., Brainin, M., Norrving, B., Martins, S.O., Pandian, J., Lindsay, P., F Grupper, M. & Rautalin, I. (2025), 'World Stroke Organization: Global Stroke Fact Sheet 2025', *International Journal of Stroke*, p.17474930241308142.

Feigin, V.L., Owolabi, M.O., Abd-Allah, F., Akinyemi, R.O., Bhattacharjee, N.V., Brainin, M., Cao, J., Caso, V., Dalton, B., Davis, A. & Dempsey, R. (2023), 'Pragmatic solutions to reduce the global burden of stroke: a World Stroke Organization–Lancet Neurology Commission', *The Lancet Neurology*, *22*(12), pp.1160-1206.

Fekadu, G., Chelkeba, L. & Kebede, A. (2019), 'RETRACTED ARTICLE: Risk factors, clinical presentations and predictors of stroke among adult patients admitted to stroke unit of Jimma university medical center, south west Ethiopia: prospective observational study', *BMC neurology*, *19*(1), p.183.

Fluck, A., Fry, C.H., Affley, B., Kakar, P., Sharma, P., Fluck, D. & Han, T.S. (2024), 'Sex-specific independent risk factors of urinary incontinence in acute stroke patients: A multicentre registry-based cohort study', *Neurourology and Urodynamics*, *43*(4), pp.818-825.

Fry, C.H., Fluck, A., Affley, B., Kakar, P., Sharma, P., Fluck, D. & Han, T.S. (2024), 'Urinary incontinence indicates mortality, disability, and infections in hospitalised stroke patients', *BJU international*, *133*(5), pp.604-613.

Funayama, M., Koreki, A., Takata, T., Nakagawa, Y. & Mimura, M. (2024), 'Post-stroke urinary incontinence is associated with behavior control deficits and overactive bladder', *Neuropsychologia*, *201*, p.108942.

Gaburak, P.P., Abedi, A., Morales Ojeda, L.A., Montero, S., Kohli, P., Ha, N., Chapman, D., Ginsberg, D., Jann, K. & Kreydin, E. (2024), 'MP59-08 DYNAMIC CHANGES IN BRAIN ACTIVATION DURING VOLITIONAL BLADDER CONTRACTIONS IN STROKE PATIENTS', *The Journal of Urology*, *211*(5S), p.e960.

Golubnitschaja, O., Polivka Jr, J., Potuznik, P., Pesta, M., Stetkarova, I., Mazurakova, A., Lackova, L., Kubatka, P., Kropp, M., Thumann, G. & Erb, C. (2024), 'The paradigm change from reactive medical services to 3PM in ischemic stroke: a holistic approach utilising tear fluid multi-omics, mitochondria as a vital biosensor and AI-based multi-professional data interpretation', *EPMA Journal*, *15*(1), pp.1-23.

Golubnitschaja, O., Potuznik, P., Polivka Jr, J., Pesta, M., Kaverina, O., Pieper, C.C., Kropp, M., Thumann, G., Erb, C., Karabatsiakis, A. & Stetkarova, I. (2022), 'Ischemic stroke of unclear aetiology: a case-by-case analysis and call for a multi-professional predictive, preventive and personalised approach', *EPMA Journal*, *13*(4), pp.535-545.

Gunardi, M.V.R. & Nabila, S.N. (2024), 'Successful Management of Ischemic Stroke: A Case Report and Literature Review', *Asian Australasian Neuro and Health Science Journal (AANHS-J)*, *6*(2), pp.56-59.

Haddad, R., Denys, P., Arlandis, S., Giannantoni, A., Del Popolo, G., Panicker, J.N., De Ridder, D., Pauwaert, K., Van Kerrebroeck, P.E. & Everaert, K. (2020), 'Nocturia and nocturnal polyuria in neurological patients: from epidemiology to treatment. A systematic review of the literature', *European urology focus*, *6*(5), pp.922-934.

Hata, J. & Ninomiya, T. (2023), 'Epidemiology of stroke in a general Japanese population: the hisayama study', *Journal of atherosclerosis and thrombosis*, *30*(7), pp.710-719.

Herrera, A.S. (2025), 'The Fundamental Role of Dissolved Oxygen Levels in Drinking Water, in the Etiopathogenesis, Prevention, Treatment and Recovery of Cerebral Vascular Events (Stroke)', *Journal of Novel Physiotherapy and Rehabilitation*, *9*(1), pp.001-006.

Hill, B. & Mitchell, A. (2023), 'Stroke: at a glance', *British Journal of Neuroscience Nursing*, *19*(Sup5), pp.S14-S21.

Hyvärinen, S., Jarva, E., Mikkonen, K., Karsikas, E., Koivunen, K., Kääriäinen, M., Meriläinen, M., Tuomikoski, A. & Oikarinen, A. (2024), 'Healthcare professionals' experience regarding competencies in specialized and primary

stroke units: A qualitative study', *Journal of Vascular Nursing*, *42*(1), pp.26-34.

Ignacio, K.H.D., Kim, D.J., Te, J.T. & Demchuk, A. (2023), 'Teaching NeuroImage: Rapidly Changing Symptoms With Multistep Migration of Clot in the Posterior Circulation After Tenecteplase for Acute Ischemic Stroke', *Neurology*, *101*(24), pp.e2589-e2590.

Islam, M.N., Moniruzzaman, M., Khalil, M.I., Basri, R., Alam, M.K., Loo, K.W. & Gan, S.H. (2013), 'Burden of stroke in Banglades', *International journal of stroke*, *8*(3), pp.211-213.

Jambi, L.K., Hamad, A., Salah, H. & Sulieman, A. (2024), 'Stroke and Disability: Incidence, Risk Factors, Management, and Impact', *Journal of Disability Research*, *3*(7), p.20240094.

Johansson, A., Drake, I., Engström, G. & Acosta, S. (2021), 'Modifiable and non-modifiable risk factors for atherothrombotic ischemic stroke among subjects in the Malmö Diet and Cancer Study', *Nutrients*, *13*(6), p.1952.

Karapolat, H., Akkoç, Y., Eyigör, S. and Tanıgör, G. (2018), 'Bladder-related quality of life in people with neurological disorders: reliability and validity of the Turkish version of the King's Health Questionnaire in people with spinal cord injury', *Turkish Journal of Urology*, *44*(5), p.411.

Kelly, D.M., Engelbertz, C., Rothwell, P.M., Anderson, C.D., Reinecke, H. & Koeppe, J. (2024), 'Age-and Sex-Specific Analysis of Stroke Hospitalization Rates, Risk Factors, and Outcomes From German Nationwide Data', *Stroke*, *55*(9), pp.2284-2294.

Khan, M.I., Khan, J.I., Ahmed, S.I. & Ali, S. (2019), 'Retracted: The epidemiology of stroke In a developing country (Pakistan)', *Pakistan Journal of Neurological Sciences (PJNS)*, *13*(3), pp.30-44.

Koradiya, N., Patel, K., Parwani, B., Chourasiya, S., Tadwala, F. and Patel, R. (2023), 'ASSESSMENT OF SIGNS & SYMPTOMS, RISK FACTORS AND PRESCRIPTION PATTERN IN ISCHEMIC STROKE PATIENTS: AN

OBSERVATIONAL & RETROSPECTIVE STUDY IN TERTIARY CARE HOSPITAL', *Pharmaceutical Research, 13*(06).

Kumar, S., Selim, M.H. & Caplan, L.R. (2020), 'Medical complications after stroke', *The Lancet Neurology, 9*(1), pp.105-118.

Lauritano, E.C., Sepe, F.N., Mascolo, M.C., Boverio, R. & Ruiz, L. (2022), 'Diagnosis and Acute Treatment of Ischemic Stroke', *Reviews on Recent Clinical Trials*.\

Leasure, A.C., Acosta, J., Sharma, R., Krumholz, H.M., de Havenon, A., Falcone, G.J. & Sheth, K.N. (2022), 'burden of ischemic and hemorrhagic stroke across the Us From 1990-2019: a global burden of disease study', *Stroke, 53*(Suppl_1), pp.A103-A103.

Li, L., Scott, C.A., Rothwell, P.M. & Oxford Vascular Study. (2020), 'Trends in stroke incidence in high-income countries in the 21st century: population-based study and systematic review', *Stroke, 51*(5), pp.1372-1380.

Li, Y., Lin, Y., Li, B., Feng, T., Li, D., Li, Y., Wu, Y. & Ta, D. (2024), 'Enhancing Ischemic Stroke Evaluation by a Model-Based Photoacoustic Tomography Algorithm', *Journal of Biophotonics*, *17*(12), p.e202400203.

Mahfoudi, H., El Harch, I., Maiouak, M., Benmaamar, S., Bourkhime, H., Omari, M., Qarmiche, N., Tachfouti, N., Otmani, N., El Fakir, S. & OMARI, M. (2024), 'Determinants of Quality of Life in Patients With Urinary Incontinence: An Assessment Using the Incontinence Quality of Life (I-QOL) Scale', *Cureus*, *16*(12).

Mamin, F.A., Islam, M.S., Rumana, F.S. and Faruqui, F. (2017), 'Profile of stroke patients treated at a rehabilitation centre in Bangladesh', *BMC research notes, 10*, pp.1-6.

Markus, H.S. (2022), 'The inequality of stroke in 2022: The impact of geography, COVID-19, and time of day, on stroke outcomes' *International Journal of Stroke*, *17*(1), pp.7-8.

Markus, H.S. (2023), 'The global burden of stroke', *International Journal of Stroke, 18*(6), pp.632-633.

Maurice, R.L. & Dahdah, N. (2024), 'Mechanical Mapping of the Common Carotid Artery in Healthy Individuals Aged 2 to 40 Years', *Journal of Clinical Medicine*, *13*(20), p.6220.

Mende, J., Rahmawati, F. & Puspitasari, I. (2022), 'Keamanan Penggunaan Antiglukolan pada Pasien Rawat Inap Stroke Iskemik dengan Atrial Fibrilasi', *JURNAL MANAJEMEN DAN PELAYANAN FARMASI (Journal of Management and Pharmacy Practice), 12*(3), pp.176-188.

Mi, Y., Huai, L., Yin, Y., Yuan, J., Liu, Y., Huang, J. & Li, W. (2023), 'Burden of stroke in China and the different SDI regions over the world', *Journal of Global Health, 13*, p.04169.

Miyazato, M., Tana, T., Higa, A., Wakugami, K., Tokashiki, T., Sakima, H., Maehara, A., Ashikari, A., Oshiro, T., Ohya, Y. & Saito, S. (2017), 'A questionnaire survey to assess lower urinary tract symptoms in patients with chronic strok' *Neurourology and Urodynamics*, *36*(7), pp.1890-1895.

Mondal, M.B.A., Hasan, A.H., Khan, N. & Mohammad, Q.D. (2022), 'Prevalence and risk factors of stroke in Bangladesh: A nationwide population-based survey', *Eneurologicalsci, 28*, p.100414.

Moon, J., Seo, Y., Lee, H.H., Lee, H., Kaneko, F., Shin, S., Kim, E., Yum, K.S., Kim, Y.D., Baek, J.H. & Kim, H.C. (2023), 'Incidence and case fatality of stroke in Korea, 2011-2020' *Epidemiology and health*, *46*, p.e2024003.

Morais Filho, A.B.D., Rego, T.L.D.H., Mendonca, L.D.L., Almeida, S.S.D., Nóbrega, M.L.D., Palmieri, T.D.O., Giustina, G.Z.D., Melo, J.P., Pinheiro, F.I. & Guzen, F.P. (2021), 'The physiopathology of spontaneous hemorrhagic stroke: a systematic review', *Reviews in the Neurosciences*, *32*(6), pp.631-658.

Moussa, M., Papatsoris, A., Abou Chakra, M., Fares, Y. & Dellis, A. (2020), 'Lower urinary tract dysfunction in common neurological diseases', *Turkish journal of urology*, *46*(Suppl 1), p.S70.

Muhammad, B. & Nabila, J. (2023) 'Perdarahan Intraserebral', *Jurnal Ilmu Kesehatan dan Gizi*, *1*(4), pp.10-15.

Niknejad, N., Ismail, W., Bahari, M. and Nazari, B. (2021), 'Understanding telerehabilitation technology to evaluate stakeholders' adoption of telerehabilitation services: a systematic literature review and directions for further research', *Archives of Physical Medicine and Rehabilitation*, *102*(7), pp.1390-1403.

O'Dell, M.W. (2023), 'Stroke rehabilitation & motor recovery', *Continuum: Lifelong Learning in Neurology*, *29*(2), pp.605-627.

Özcan, F. & Özişler, Z. (2022), 'The relationship between urinary symptom severity and functional status in patients with stroke', *Scottish Medical Journal*, *67*(2), pp.64-70.

Parry-Jones, A.R., Krishnamurthi, R., Ziai, W.C., Shoamanesh, A., Wu, S., Martins, S.O. & Anderson, C.S. (2025), 'World Stroke Organization (WSO): Global intracerebral hemorrhage factsheet 2025', *International Journal of Stroke*, p.17474930241307876.

Patel, J., Huynh, T.J., Rao, D. & Brzezicki, G. (2020), 'Vascular trauma in the head and neck and endovascular neurointerventional management' *Journal of Clinical Imaging Science*, *10*, p.44.

Pelawi, A.M.P., Deniati, K., Gea, N.Y.K., Meliyana, E., Agustina, L.& Nuryanti, L. (2024), 'Kenali Diri dan Keluarga Tentang Stroke dengan Langkah "CERDIK"', *Health Care: Journal of Community Service*, *2*(1), pp.38-44.

Perdana, P.C., Ardhi, M.S. & Susanto, H. (2024) 'PROFILE OF CHARACTERISTIC, RISK FACTOR, AND CLINICAL SEVERITY OF ISCHEMIC STROKE PATIENTS', MNJ (Malang Neurology Journal), 10(1), pp. 35–39.

Persson, H.C., Reinholdsson, M., Lange, E., Barna, S. & Palstam, A. (2025), 'Advancing sustainable healthcare through multidisciplinary stroke team rehabilitation', *Frontiers in Stroke*, *3*, p.1509831.

Puy, L., Parry-Jones, A.R., Sandset, E.C., Dowlatshahi, D., Ziai, W. & Cordonnier, C. (2023), 'Intracerebral haemorrhage', *Nature Reviews Disease Primers*, *9*(1), p.14.

Pyo, H., Kim, B.R., Park, M., Hong, J.H. & Kim, E.J. (2017), 'Effects of overactive bladder symptoms in stroke patients' health related quality of life and their performance scale', *Annals of Rehabilitation Medicine, 41*(6), pp.935-943.

Ramzi, H.T., Khurram, M.S. & Manzoor, S. (2023), 'The need for Stroke code and Thrombectomy in Pakistan', *JPMA. The Journal of the Pakistan Medical Association, 73*(1), p.212.

Ręba, P. (2020), 'Stroke-diagnosis & treatment methods', *Journal of Education, Health and Sport, 10*(5), pp.169-174.

Renedo, D., Acosta, J.N., Leasure, A.C., Sharma, R., Krumholz, H.M., De Havenon, A., Alahdab, F., Aravkin, A.Y., Aryan, Z., Bärnighausen, T.W. & Basu, S. (2024), 'Burden of ischemic and hemorrhagic stroke across the US from 1990 to 2019', *JAMA neurology*, *81*(4), pp.394-404.

Sadat, A., Podder, V. & Biswas, R. (2023), 'Stroke strikes in Bangladesh: current insights and future directions', *Cureus, 15*(4).

Sadeghi, M.A., Hemmati, S., Razavi, S.Z.E., Vahabizad, F., Yekaninejad, M.S. & Azadvari, M. (2023) 'Prevalence and features of post-stroke urinary incontinence: A retrospective cohort study', *Archives of Iranian medicine, 26*(5), p.234.

Saha, U.K., Alam, M.B., Rahman, A.K.M.F., Hussain, A.H.M.E., Mashreky, S.R., Mandal, G. & Mohammad, Q.D. (2018), 'Epidemiology of stroke: findings from a community-based survey in rural Bangladesh', *Public health, 160*, pp.26-32.

Sarkar, S., Rahman, A., Islam, N., Emran, M.A. & Biswas, J. (2023), 'Quality of life of stroke survivors in Bangladesh', *SAGE Open Medicine, 11*, p.20503121231208604.

Schuster, S., Kelečić, I.L. & Uglešić, K. (2022), 'Urogenital dysfunction and quality of life in women after stroke: Pilot study' *Journal of health sciences, 12*(2), pp.152-156.

Shabbir, F., Nisar, S., Ashraf, B., Ahmed, I. & Khan, H. (2022), 'Association of Various Factors with the Presence of Urinary Tract Infections Among Patients Suffering from Stroke', *Pakistan Armed Forces Medical Journal, 72*(5), p.1522.

Shahid, J., Kashif, A. & Shahid, M.K. (2023), 'A comprehensive review of physical therapy interventions for stroke rehabilitation: impairment-based approaches and functional goals' *Brain Sciences, 13*(5), p.717.

Shamshiev Almas, S., Saduakas Yergaliuly, Y., Zhakubayev Manat, A., Zh, M.A., Demeuov Talgat, N., Ingkar, O., Makkamov Rustam, O., Yerkinbayev Nurlybek, N., Alisher, K., Appazov Daniyar, M. & Nursultan, B. (2024), 'STROKE: A COMPREHENSIVE OVERVIEW OF TRENDS, PREVENTION, AND TREATMENT', *Stroke, 51*(8), pp.2418-2427.

Sharma, L.R. & Bhattarai, T. (2024), 'Determining an Applicable Sample Size in Research Studies. *International Research Journal of MMC, 5*(4), pp.29-40.

Shuvo, T.A., Hosna, A.U., Hossain, K. & Hossain, S., 2024. Prevalence of stroke in Bangladesh: a systematic review and meta-analysis', *Journal of Stroke and Cerebrovascular Diseases,* p.108017.

Sibson, L. (2023), 'Stroke: aetiology, identification, management and the future', *Journal of Paramedic Practice, 15*(1), pp.1-12.

Singh, R.K., Sachin, S.S., Yunus, N., Kumar, M. & Sinha, R.I. (2023), 'Acute ischemic stroke: management approach', *Int J Basic Clin Pharmacol, 12*(2), p.324.

Smith, C.E. & Schneider, M.A. (2020), 'Assessing postvoid residual to identify risk for urinary complications post stroke', *Journal of Neuroscience Nursing, 52*(5), pp.219-223.

Soler, R., Averbeck, M.A., Koyama, M.A. & Gomes, C.M. (2019), 'Impact of LUTS on treatment-related behaviors and quality of life: A population-based study in Brazil', *Neurourology and Urodynamics, 38*(6), pp.1579-1587.

Stallings, E. (2023), 'Biostatistics for gastroenterologists. Part II--Rethinking sample size', *Revista Espanola de Enfermadades Digestivas (REED), 115*(8), pp.411-414.

Su, H. (2017), 'Inflammation & genetic factors in stroke pathogenesis', *Neuroimmunology and neuroinflammation*, *4*, p.260.

Sun, H., Ge, S., Jiang, B., Ru, X., Wang, L., Zhang, M. & Wang, W. (2025), 'Incidence of First-ever Stroke, Stroke Events, and Early Case Fatality Rate in China: Results from a National Population-based Survey', *Neuroepidemiology*.

Tateno, F., Sakakibara, R., Aiba, Y., Takahashi, O., Shimizu, A., Sugiyama, M., Ogata, T. & Takada, N. (2020), 'Bladder autonomic dysfunction after a parietal stroke', *Journal of Stroke and Cerebrovascular Diseases*, *29*(4), p.104620.

Thomas, L.H., Coupe, J., Cross, L.D., Tan, A.L. & Watkins, C.L. (2019), 'Interventions for treating urinary incontinence after stroke in adults, *Cochrane Database of Systematic Reviews*, (2).

Tibæk, S. (2018), 'The Role of Physiotherpy in the Rehabilitation of Stroke Patients with Lower Urinary Tract Symptoms', *Journal of Physical Medicine*, *1*(1), pp.32-40.

Tonani, L.L., Bortolini, M.A., Santos, R.G., Fukujima, M.M. & Castro, R.A. (2023), 'Correlation between ischemic stroke topography and female urinary incontinence', *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *291*, pp.206-211.

Torquato, B.A., de Almeida, E.L., Bentes, J.L.A., de Abreu, L.V.M., Soares, L., de Sousa Martins, N., Lopes, R.M. & Moreira, R.G. (2024), 'ADVANCES IN CARE FOR PATIENTS WITH STROKE: INTEGRATIVE REVIEW', *Health and Society*, *4*(05), pp.263-272.

Tuong, N.E., Klausner, A.P. and Hampton, L.J. (2016), 'A review of post-stroke urinary incontinence', *The Canadian journal of urology*, *23*(3), pp.8265-8270.

Turner, D.P. (2020), 'Sampling Methods in Research Design', *Headache: The Journal of Head & Face Pain*, *60*(1).

Williams, S.A. & Oka, A.V. (2024), 'A review on cerebro-vascular accidents:', *International Journal of Nursing and Health Sciences 2024; 6(1): 01-04.*

Wafa, H.A., Wolfe, C.D., Emmett, E., Roth, G.A., Johnson, C.O. & Wang, Y. (2020), 'Burden of stroke in Europe: thirty-year projections of incidence, prevalence, deaths, and disability-adjusted life years', *Stroke*, *51*(8), pp.2418-2427.

Williams, M.P., Srikanth, V., Bird, M. & Thrift, A.G. (2012), 'Urinary symptoms and natural history of urinary continence after first-ever stroke—a longitudinal population-based study', *Age and Ageing*, *41*(3), pp.371-376.

Xue, Y., Haesebaert, J., Derex, L., Viprey, M., Termoz, A., Della Vecchia, C., Tassa, O., Kerd, H., Cakmak, S., Meyran, S. & Ducreux, B. (2020), 'Choice of initial brain imaging in patients with suspected acute stroke: STROKE69, a population-based study', *Cerebrovascular Diseases*, *49*(1), pp.110-118.

Zhang, W., Song, S., Zhang, T., Ju, X., Shu, S. & Zhou, S. (2024), 'Electroacupuncture for urinary retention after stroke: A systematic review and meta-analysis of randomized controlled trials', *Complementary Therapies in Clinical Practice*, p.101877.

Zrelak, P.A. (2021), 'Why stroke is not a cerebrovascular accident and there are no victims', *Journal of Neuroscience Nursing*, *53*(1), pp.24-25.

Zuleika, P. & Siswo, L. (2022), 'Cross-sectional study as research design in medicine', *Archives of The Medicine and Case Reports*, *3*(2), pp.256-259.

Appendix

Appendix 1(A)

বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/12/2024/1022 Date: 15 /12/2024

To
Rabeya Khatun
4th Year B.Sc. in Physiotherapy
Session: 2019-2020, Student ID: 112190518
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Approval of the thesis proposal "Urinary tract symptoms in female patients with stroke and impact on their quality of life" by the ethics committee.

Dear Rabeya Khatun,
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with you, as the principal investigator and Professor Md. Obaidul Haque, Vice principal, BHPI as thesis supervisor. The following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Research Proposal
2	Questionnaire (English version)
3	Information sheet & consent form.

The purpose of the study is to explore the urinary tract symptoms in female stroke patients and impact on their quality of life. The study involves the use of the Kings Health Questionnaire to explore the urinary tract symptoms in female stroke patients and impact on their quality of life that may take 15 to 20 minutes to fill in the questionnaire any instruction or precaution for collection of specimen. There is no likelihood of any harm to the participants and participation in the study may benefit the participants or other stakeholders by knowing the urinary tract symptoms in female stroke patients and impact on their quality of life as this study helps to develop an effective rehabilitation program and create awareness. The members of the Ethics Committee have approved the study to be conducted in the presented form at the meeting held at 9 AM on 15 July 2024 at BHPI (44th IRB Meeting).

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol, and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working in accordance with the Nuremberg Code 1947, the World Medical Association Declaration of Helsinki, 1964 - 2013, and other applicable regulations.

Best regards,

Muhammad Millat Hossain,
Associate Professor & Course Coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

Appendix 1(B)

Date: 28.12.2024

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343

Through: Head, Department of Physiotherapy, BHPI.

Subject: Prayer for seeking permission to collect data for conducting research project.

Sir,

With due to respect and humble submission to state that I am Rabeya Khatun, a student of 4th year B.Sc. in physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: **"Urinary tract symptoms in female patients with stroke and impact on their quality of life"** under the supervision of Professor Md. Obaidul Haque, Vice principal, BHPI. I want to collect data for my research project from the Department of Physiotherapy at CRP. So, I need permission for data collection from the Neurology Unit of Physiotherapy Department at CRP-Savar, Dhaka-1343. I would like to assure that anything of the study will not be harmful for the participants and the Department itself.

I, therefore pray and hope that you would be kind enough to grant my application and give me permission for data collection and oblige thereby.

Yours faithfully,

Rabeya Khatun

Rabeya Khatun

4th Year

B.Sc. in Physiotherapy

Class Roll: 15; Session: 2019-20

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Recommended & Forwarded

28.12.24

Prof. Md. Obaidul Haque
Vice Principal
BHPI, CRP, Savar, Dhaka-1343

Forwarded HOD, PT Dept CRP,

28.12.2025

Dr. Shazal Kumar Das PhD
Assistant Professor and Head
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka.

Approved

18/08/25

Prof. Dr. Mohammad Anwar Hossain, PhD
Professor Physiotherapy Department BHPI
Senior Consultant & Head
Physiotherapy Department
CRP, Savar, Dhaka-1343

Appendix 2 (A)

অনুমতি পত্র

(অনুগ্রহ করে অংশগ্রহণকারীদের পড়ে শোনান)

আসসালামু আলাইকুম

আমার নাম রাবেয়া খাতুন। আমি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) এর বিএসসি ফিজিওথেরাপি কোর্সের ৪র্থ বর্ষের শিক্ষার্থী। আমার পড়াশোনার জন্য আমি নারী স্ট্রোক রোগীদের উপর একটি গবেষণা পরিচালনা করছি এবং আমার গবেষণার শিরোনাম হল "নারী স্ট্রোক রোগীদের মূত্রনালী সমস্যাসমূহ এবং তাদের জীবনমানের উপর প্রভাব" । আমি এই গবেষণা সম্পর্কিত কিছু তথ্য এবং অন্যান্য সম্পর্কিত তথ্য জানতে চাই। এতে আনুমানিক ১৫-২০ মিনিট সময় লাগবে।

আমি আপনাকে জানাতে চাই যে এটি একটি একাডেমিক গবেষণা এবং অন্য কোনো উদ্দেশ্যে ব্যবহৃত হবে না। এই গবেষণায় অংশগ্রহণ আপনার বর্তমান বা ভবিষ্যতের চিকিৎসার উপর কোনো প্রভাব ফেলবে না। গবেষক সমস্ত তথ্যের গোপনীয়তা বজায় রাখবে। আপনার অনুমতি ছাড়া আপনার ডেটা কখনও ব্যবহৃত হবে না। এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছামূলক এবং আপনি যে কোনো সময় গবেষণা থেকে নিজেকে প্রত্যাহার করতে পারেন। গবেষণা সম্পর্কে বা একজন অংশগ্রহণকারী হিসেবে আপনার অধিকার সম্পর্কে যদি আপনার কোনো প্রশ্ন থাকে, তাহলে আপনি গবেষক রাবেয়া খাতুন অথবা আমার সুপারভাইজার অধ্যাপক মোঃ ওবায়দুল হক, ভাইস-প্রিন্সিপাল, বিএইচপিআই, সিআরপি, সাভার, ঢাকা- ১৩৪৩ এর সাথে যোগাযোগ করতে পারেন।

আপনার কি শুরুর আগে কোনো প্রশ্ন আছে?
তাহলে, আমি কি সাক্ষাৎকারটি শুরু করার জন্য আপনার সম্মতি পেতে পারি?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর স্বাক্ষর: ……তারিখ: …….
স্বাক্ষীর স্বাক্ষর: …… তারিখ: ……

Appendix 2 (B)

English Consent Form

(Please read out to the participants)

Assalamu-alaikum

My name is Rabeya Khatun. I am a 4th year student of B.Sc. in Physiotherapy program at Bangladesh Health Professions Institute (BHPI). For my study purpose I am conducting a study on female stroke patients and my study title is "Urinary tract symptoms in female patients with stroke and impact on their quality of life". I would like to know about some personal information and other related information. This will take approximately 15-20 minutes.

I would like to inform you that this is an academic study and will not be used for any other purpose. Your participation in the research will have no impact on your present or future treatment. Researcher will maintain confidentiality of all procedures. Your data will never be used without your permission. Your participation in this study is voluntary and you may withdraw yourself at any time during this study. If you have any query about the study or your right as a participant, you may contact with, researcher Rabeya Khatun or my supervisor, Professor Md. Obaidul Haque, Vice-Principal, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

So, may I have your consent to proceed with the interview?

Yes ☐ No ☐

Signature of the Participant: ……. Date: ……..

Signature of the Interviewer: ……. Date: ……..

Appendix 3 (A)

নারী স্ট্রোক রোগীদের মূত্রনালী সমস্যাসমূহ এবং তাদের জীবনমানের উপর প্রভাব

রোগীর তথ্য

রোগীর নাম:

রোগীর আইডি:

রোগীর ঠিকানা:

যোগাযোগের নম্বর:

অংশ-১: আর্থ-সামাজিক তথ্যাবলি

[সঠিক উত্তরের পাশে টিক (√) চিহ্ন প্রদান করুন]

প্রশ্ন নম্বর	প্রশ্ন	উত্তর/প্রতিক্রিয়া
১.১	বয়স	..... বছর
১.২	বৈবাহিক অবস্থা	১ = বিবাহিত ২ = অবিবাহিত ৩ = আলাদা ৪ = তালাকপ্রাপ্ত ৫ = বিধবা
১.৩	শিক্ষাগত যোগ্যতা	১ = প্রাতিষ্ঠানিক শিক্ষা নেই ২ = প্রাথমিক ৩ = মাধ্যমিক ৪ = উচ্চ মাধ্যমিক ৫ = স্নাতক ৬ = স্নাতকোত্তর ও তদূর্ধ্ব
১.৪	ধর্ম	১ = ইসলাম ২ = হিন্দু ধর্ম ৩ = খ্রিস্টান ধর্ম ৪ = বৌদ্ধ ধর্ম ৫ = অন্যান্য

১.৫	বসবাসরত এলাকা	১ = গ্রাম ২ = উপ-শহর ৩ = শহর
১.৬	পেশা	১ = গৃহিণী ২ = চাকরিজীবী ৩ = শিক্ষার্থী ৪ = অবসরপ্রাপ্ত ৫ = ব্যবসায়ী ৬ = বেকার ৭ = অন্যান্য
১.৭	আপনার পরিবারে সদস্য কতজন?	১ = ১-২ ২ = ৩- ৫ ৩ = >৫
১.৮	আপনার পরিবারের গড় মাসিক আয় কত?	১ = ০-১৫,০০০ BDT ২ = ১৬,০০০-৩০,০০০ BDT ৩ = >৩০,০০০ BDT

অংশ- ২: ঝুঁকির সাথে সম্পর্কিত তথ্য

[সঠিক উত্তরের পাশে টিক (√) চিহ্ন প্রদান করুন]

প্রশ্ন নম্বর	**প্রশ্ন**	**উত্তর/প্রতিক্রিয়া**
২.১	মদ্যপান	১ = হ্যাঁ ২ = না
২.২	ধূমপান	১ = হ্যাঁ ২ = না
২.৩	যদি ধূমপান করেন, সিগারেটের সংখ্যা	.....প্রতি দিন/বছর
২.৪	পূর্বের চিকিৎসার তথ্য	১ = উচ্চ রক্তচাপ ২ = ডায়াবেটিস মেলিটাস ৩ = হৃদরোগ ৪ = ফুসফুসের রোগ ৫ = অন্যান্য

অংশ- ৩: স্ট্রোক সম্পর্কিত তথ্য

[সঠিক উত্তরের পাশে টিক (√) চিহ্ন প্রদান করুন]

	প্রশ্ন	উত্তর/প্রতিক্রিয়া
৩.১	স্ট্রোকের প্রকার:	১=ইস্কেমিক ২ = হেমোরেজিক
৩.২	স্ট্রোকের তারিখ	
৩.৩	স্ট্রোকের সংখ্যা	১ = প্রথম ২ = দ্বিতীয় ৩ = তৃতীয়

অংশ ৪: স্ব-গঠিত মূত্রনালীর উপসর্গ সম্পর্কিত প্রশ্নাবলী

[সঠিক উত্তরের পাশে টিক (√) চিহ্ন প্রদান করুন]

	প্রশ্ন	হ্যাঁ	না
৪.১	**আর্জ:** আপনি কি মূত্রত্যাগের জন্য তীব্র তাগিদ অনুভব করেন?	১	২
৪.২	**আর্জ ইনকন্টিনেন্স:** হঠাৎ মূত্রত্যাগের তাগিদ অনুভব করার পরে আপনি কি প্রস্রাব ধরে রাখতে ব্যর্থ হন বা প্যাড ভিজে যায়?	১	২
৪.৩	**স্ট্রেস ইনকন্টিনেন্স:** কাশি, হাঁচি বা হাসির সময় কি আপনার প্রস্রাব নিঃসরণ হয়?	১	২
৪.৪	**মিক্সড ইনকন্টিনেন্স:** আপনি কি জরুরি অবস্থায় অথবা শারীরিক কার্যকলাপ, হাঁচি বা কাশির সাথে প্রস্রাব ধরে রাখতে ব্যর্থ হন?	১	২
৪.৫	**ডিসুরিয়া:** মূত্রত্যাগের সময় আপনি কি ব্যথা বা জ্বালাভাব অনুভব করেন?	১	২
৪.৬	**হেসিটেন্সি:** আপনি কি মূত্রত্যাগের জন্য অপেক্ষা করতে বাধ্য হন?	১	২
৪.৭	**উইক স্ট্রিম**: আপনি কি অনুভব করেন যে মূত্রত্যাগ করার সময় স্বাভাবিকের থেকে বেশি সময় লাগছে?	১	২

৪.৮	**ইনকমপ্লিট এমপ্টি-ইং:** আপনি কি অনুভব করেন যে আপনার মূত্রাশয় সম্পূর্ণ খালি হয়নি?	১	২
৪.৯	**ফ্রিকোয়েন্সি:** মূত্রত্যাগ শেষ করার দুই ঘণ্টার মধ্যে আপনি কি আবার মূত্রত্যাগের তাগিদ অনুভব করেন?	১	২
৪.১০	**নকটুরিয়া:** আপনি কি নিয়মিত রাতে মূত্রত্যাগের জন্য ঘুম থেকে উঠেন?	১	২

অংশ- ৫: জীবনমান সম্পর্কিত প্রশ্নাবলী

কিংস হেলথ প্রশ্নাবলী

৫.১. আপনি বর্তমানে আপনার স্বাস্থ্যকে কীভাবে বর্ণনা করবেন?

একটি উত্তরে টিক চিহ্ন দিন

খুব ভালো	১
ভালো	২
মোটামুটি	৩
খারাপ	৪
খুব খারাপ	৫

৫.২. আপনার ধারণায় মূত্রাশয়ের সমস্যা আপনার জীবনে কতটা প্রভাব ফেলে?

একটি উত্তরে টিক চিহ্ন দিন

একেবারেই না	১
সামান্য	২
মাঝারি	৩
অনেক	৪

নীচে কিছু দৈনন্দিন কার্যকলাপ উল্লেখ করা হয়েছে যা মূত্র সমস্যার কারণে প্রভাবিত হতে পারে। আপনার মূত্রাশয়ের সমস্যা আপনাকে কতটা প্রভাবিত করে?

আমরা চাই আপনি প্রতিটি প্রশ্নের উত্তর দিন। আপনার জন্য প্রযোজ্য সংখ্যাটি চিহ্নিত করুন।

৫.৩ সীমাবদ্ধতা	**মোটেও না**	**সামান্য**	**মাঝারি**	**অনেকটাই**
ক. আপনার মূত্র সমস্যা কি গৃহস্থালির কর্মকাণ্ডকে প্রভাবিত করে?	১	২	৩	৪
খ. আপনার মূত্র সমস্যা কি আপনার চাকরি বা বাড়ির বাইরের স্বাভাবিক দৈনন্দিন কাজকর্মকে প্রভাবিত করে?	১	২	৩	৪

৫.৪ শারীরিক সীমাবদ্ধতা	**মোটেও না**	**সামান্য**	**মাঝারি**	**অনেকটাই**
ক. আপনার মূত্র সমস্যা কি আপনার শারীরিক কার্যকলাপ (যেমন হাঁটা, দৌড়ানো, খেলা) প্রভাবিত করে?	১	২	৩	৪
খ. আপনার মূত্র সমস্যা কি আপনার ভ্রমণের ক্ষমতা প্রভাবিত করে?	১	২	৩	৪

৫.৫ সামাজিক সীমাবদ্ধতা	**মোটেও না**	**সামান্য**	**মাঝারি**	**অনেকটাই**
ক. আপনার মূত্র সমস্যা কি আপনার সামাজিক জীবনকে সীমাবদ্ধ করেছে?	১	২	৩	৪
খ. আপনার মূত্র সমস্যা কি আপনাকে বন্ধুদের সাথে দেখা করাকে ব্যহত করেছে?	১	২	৩	৪

৫.৬ ব্যক্তিগত সম্পর্ক	**প্রযোজ্য নয়**	**মোটেও না**	**সামান্য**	**মাঝারি**	**অনেকটাই**
ক. আপনার মূত্র সমস্যা কি আপনার সঙ্গীর সাথে সম্পর্ককে প্রভাবিত করে?	০	১	২	৩	৪
খ. মূত্র সমস্যা কি আপনার যৌনজীবনে প্রভাব ফেলে?	০	১	২	৩	৪
গ. মূত্র সমস্যা কি আপনার পারিবারিক জীবনকে প্রভাবিত করে?	০	১	২	৩	৪

৫.৭ অনুভূতি	**মোটেও না**	**সামান্য**	**মাঝারি**	**অনেকটাই**
ক. আপনার মূত্র সমস্যা কি আপনাকে বিষণ্ন অনুভব করায়?	১	২	৩	৪
খ. আপনার মূত্র সমস্যা কি আপনাকে উদ্বিগ্ন বা নার্ভাস অনুভব করায়?	১	২	৩	৪
আপনার মূত্র সমস্যা কি আপনাকে নিজের সম্পর্কে খারাপ অনুভব করায়?	১	২	৩	৪

৫.৮ ঘুম/শক্তি	**কখনও না**	**কখনও কখনও**	**প্রায়ই**	**সবসময়**
ক. আপনার মূত্র সমস্যা আপনার ঘুমকে প্রভাবিত করে?	১	২	৩	৪

খ. আপনার মূত্র সমস্যা কি আপনাকে ক্লান্ত এবং অবসন্ন অনুভব করায়?	১	২	৩	৪

৫.৯ তীব্রতার মাত্রা	**কখনও না**	**কখনও কখনও**	**প্রায়ই**	**সবসময়**
ক. শুষ্ক রাখতে প্যাড পড়েন?	১	২	৩	৪
কতটুকু পানি পান করছেন তা নিয়ে সতর্ক থাকেন?	১	২	৩	৪
গ. ভিজে যাওয়ার কারণে অন্তর্বাস পরিবর্তন করেন?	১	২	৩	৪
ঘ. গন্ধ হলে চিন্তা করেন?	১	২	৩	৪

Appendix 3 (B)

Urinary tract symptoms in female patients with stroke and impact on their quality of life

Patient information

Patient's name:

Patient's ID:

Patient's address:

Contact number:

Part-1: Socio-demographic information

[Use tick (√) to mark the correct answer]

QN	Questions	Response
1.1	Age	……In year
1.2	Marital status	1= Married 2= Unmarried 3= Separated 4= Divorced 5= Widow
1.3	Education status	1= No formal education 2= Primary 3= Secondary 4= Higher Secondary 5= Graduate 6= Masters and above
1.4	Religion	1= Islam 2= Hinduism 3= Christianity 4= Buddhism 5= Others
1.5	Residential area	1= Rural 2= Semi-urban 3= Urban
1.6	Occupation	1= House wife 2= Service holder 3= Retired 4= Student 5= Businesswoman

		6= Unemployed 7= Others
1.7	How many numbers are there in your family?	1= 1-2 2= 3-5 3= >5
1.8	What is the average monthly income of your household?	1= 0-15000 BDT 2= 16000-30000 BDT 3= >30000 BDT

Part-2: Comorbidity related information

[Use tick (√) to mark the correct answer]

	Questions	**Response**
2.1	Alcohol consumption	1= Yes 2= No
2.2	Smoking	1= Yes 2= No
2.3	If smoke, number of cigarettes	……Per day/year
2.4	Past medical information	1= Hypertension 2= Diabetes mellitus 3= Heart disease 4= Lung disease 5= Others

Part-3: Stroke related information

[Use tick (√) to mark the correct answer]

	Questions	**Response**
3.1	Type of stroke:	1= Ischaemic 2= Haemorrhagic
3.2	Date of stroke	
	Number of strokes	1= First 2= Second 3= Third

Part-4: Self-administered Urinary tract symptoms related questions

[Use tick (√) to mark the correct answer]

	Questions	Yes	No
4.1	Urge: Do you experience a strong urge to urinate?	1	2
4.2	Urge incontinence: Do you leak urine or wet a pad after feeling a sudden need to urinate?	1	2
4.3	Stress incontinence: Do you experience leakage of urine when you coughing, sneezing, laughing?	1	2
4.4	Mixed incontinence: Do you feel involuntary loss of urine with urgency and with physical exertion, sneezing, or coughing?	1	2
4.5	Dysuria: Do you feel pain or have a burning feeling when you urinate?	1	2
4.6	Hesitancy: Do you have wait for urination?	1	2
4.7	Weak stream: Do you feel like you take long time to urinate than normal?	1	2
4.8	Incomplete emptying: Do you feel empty your bladder completely?	1	2
4.9	Frequency: Do you have to urinate within two hours after you have finished urinating?	1	2
4.10	Nocturia: Do you need for to get up at night regularly to urinate?	1	2

Part-5: Quality of life related questions

Kings Health Questionnaire

6.1. How would you describe your health at the present?

	Please tick one answer
Very good	1
Good	2
Fair	3
Poor	4
Very poor	5

6.2. How much do you think your bladder problem affects your life?

	Please tick one answer
Not at all	1
A little	2
Moderately	3
A lot	4

Below are some daily activities that can be affected by bladder problems. How much does your bladder problem affect you?

We would like to answer every question. Simply tick the number that applies to you.

6.3 Role limitations	**Not at all**	**Slightly**	**Moderately**	**A lot**
A. Dose your bladder problem affect your household tasks? (Cleaning, shopping etc.)	1	2	3	4
B. Does your bladder problem affect your job or your normal daily activities outside the home?	1	2	3	4

6.4 Physical limitations	**Not at all**	**Slightly**	**Moderately**	**A lot**
A. Dose your bladder problem affect your physical activities	1	2	3	4

	(e. g going for a walk, running, sport, gym etc)?				
B.	Dose your bladder problem affect your ability to travel?	1	2	3	4

6.5 Social limitations		**Not at all**	**Slightly**	**Moderately**	**A lot**
A.	Dose your bladder problem limit your social life?	1	2	3	4
B.	Dose your bladder problem limit your ability to see and visit friends?	1	2	3	4

6.6 Personal relationships		**Not applicable**	**Not at all**	**Slightly**	**Moderately**	**A lot**
A.	Dose your bladder problem affect your relationship with your partner?	0	1	2	3	4
B.	Dose your bladder problem affect your sex life?	0	1	2	3	4
C.	Dose your bladder problem affect your family life?	0	1	2	3	4

6.7 Emotions		**Not at all**	**Slightly**	**Moderately**	**A lot**
A.	Dose your bladder problem make you feel depressed?	1	2	3	4
B.	Dose your bladder problem make you feel anxious or nervous?	1	2	3	4

C. Dose your bladder problem make you feel bad about yourself?	1	2	3	4

6.8 Sleep/Energy	**Never**	**Sometimes**	**Often**	**All the time**
A. Dose your bladder problem affect your sleep?	1	2	3	4
B. Dose your bladder problem make you feel worn out and tried?	1	2	3	4

6.9 Severity measures	**Never**	**Sometimes**	**Often**	**All the time**
A. Wear a pad to keep dry?	1	2	3	4
B. Be careful how much fluid you drink?	1	2	3	4
C. Change your underclothes because they get wet?	1	2	3	4
D. Worry in case you smell?	1	2	3	4