



Exploring The Challenges Faced By Post-Stroke Patients In Maintaining Oral Hygiene: A Qualitative Inquiry

Srelekha Nag¹, Dr. Sonali Jadhav Tarachand²

Student¹, Professor²

Ramaiah Institute of Nursing Education and Research, Bengaluru

Abstract: Stroke often leads to upper limb impairments like hemiparesis and poor hand coordination, complicating tasks such as oral hygiene maintenance. This can result in dental issues and increased risk of aspiration pneumonia, a major cause of post-stroke mortality. Despite its importance, oral hygiene is often neglected in stroke recovery. This qualitative phenomenological study conducted semi-structured interviews with 10 post-stroke patients, identifying challenges related to physical impairments, emotional responses, and healthcare perspectives, and highlighting the need for low-cost interventions to improve oral care and quality of life.

Keywords: Post stroke oral hygiene, Hemiparesis, Qualitative phenomenological study

INTRODUCTION

A cerebrovascular accident, commonly known as a stroke, is a severe neurological condition where the brain's blood supply is interrupted, leading to oxygen deprivation, brain damage, and loss of function. This neurological emergency can result in varying degrees of disability, some of which may be lifelong. Stroke is a growing global health concern, with a rising incidence of disability-adjusted life years (DALYs) associated with it, making it an alarming health emergency worldwide ^[1]. The situation is particularly concerning in lower-middle-income countries, where the incidence of stroke-related DALYs is predicted to increase by 2050^[2]. In India, stroke has become the fifth leading cause of DALYs. ^[2] Maintaining optimal oral hygiene is a critical aspect of overall health, yet post-stroke patients often struggle with performing oral care tasks due to the physical and cognitive impairments caused by the stroke.^[3] The debilitating effects of stroke, such as hemiparesis, spasticity, and reduced hand dexterity, can severely limit a patient's ability to use a standard toothbrush effectively.^[4] This can lead to poor oral health outcomes and an increased risk of complications, including dental caries, periodontitis, and aspiration pneumonia—a leading cause of mortality in post-stroke patients^[5]. The primary motivation behind this research is to explore the oral hygiene difficulties faced by the post stroke patients and their oral hygiene needs.

Addressing these oral hygiene related needs is a pivotal step to improve and ease the difficulties and improve their quality of life.

RESEARCH METHODOLOGY

The study used a qualitative approach. In this study semi structured interviews were conducted with the 10 post stroke patients by using phenomenological approach to identify the difficulties faced by the stroke patients while carrying out oral hygiene practice and what were their oral hygiene needs. The qualitative study was carried out at the Neurorehabilitation unit of the Ramaiah Memorial Hospital located in Bengaluru.

Sample and sample size

For qualitative study sample size was decided based on the data saturation. Data saturation was observed after interviewing ten post-stroke patients. For the qualitative study purposive sampling technique was used.

Inclusion and Exclusion criteria:

- According to the Brunnstrom Hand Recovery Stages approach, the participants who came under the hand recovery stage 4 and stage 5 were included in this study^[6]
- Participants who were fluent in speaking Hindi and English.
- Participants who were willing to share their experiences with regards to oral hygiene practices after stroke

Exclusion criteria:

The participants in this study were excluded based on following exclusion criteria:

- With pre-existing psychiatric conditions.
- Who did not follow Hindi/English language.

Ethical clearance:

The ethical clearance for this study was obtained from the ethics committee of Ramaiah Medical College.

Data collection procedure:

Participants were provided detailed study information and gave informed consent for a physical examination, conducted by experienced neuro-rehabilitation physiotherapists to assess hand recovery stages. Privacy and comfort were prioritized. Those in Brunnstrom stages four and five were included. A second informed consent was obtained for one-on-one, audiotaped semi-structured interviews, conducted in a private setting.

Statistical method:

Audiotaped patient interviews were transcribed using Turbo Scribe software, with manual corrections done by the researcher for accuracy. Interpretative content analysis was used, identifying major themes and categories through repeated readings. Data analysis continued until no new themes emerged, and all relevant texts were coded systematically.

RESULT**Table 1.1: This table represents socio- demographic characteristics of post stroke patients**

Gender	Age	Phase of stroke	Marital status	Employment status	Dominant hand	Affected hand
Male	57 years	Chronic phase (>6months)	Married	Unemployed	Right	Both Right hand is weaker than left
Male	48 years	Late sub-acute phase (4-6 months post Stroke)	Married	Unemployed	Right	Right
Male	47 years	Chronic phase (>6 months)	Married	Unemployed	Right	Right
Male	53 years	Late sub-acute (4-6 months post stroke)	Married	Unemployed	Right	Right
Male	46 years	Late sub-acute (4-6 months post stroke)	Married	Unemployed	Right	Right
Female	43 years	Late sub-acute phase (4-6 months post stroke)	Married	Unemployed	Right	Right
Male	48 years	Late subacute (4-6 months post stroke)	Married	Unemployed	Right	Right
Female	38 years	Early subacute phase (first 3 months post stroke)	Married	Unemployed	Right	Right
Male	52 years	Chronic phase (>6 months post stroke)	Married	Unemployed	Right	Right
Male	41 years	Late sub-acute (4-6 months post stroke)	Married	Unemployed	Right	Right

Table 1.2: This table represents various categories and themes that emerged from the analysis of the qualitative data

THEMES	CATEGORIES
Physical Impact and Persisting Challenges	Functional impairment on the dominant side (weakness, pain, fatigue, ineffective handling of objects, sensory changes) Slower recovery of the affected upper extremity Persistence of impairment in hand functionality (movement difficulties, coordination issues, difficulty lifting/holding objects, impaired fine motor control) compared to the lower extremity
Oral Hygiene Difficulties and Assistive Device Needs	Challenges in maintaining oral hygiene (difficulty moving the brush, reaching hard-to-access areas, coordination issues, impaired fine motor control and release) Need for assistive device (desire for independence, interest in design specifications for easy oral hygiene tasks) Ideal toothbrush preferences (large handle, textured surface, angled and flexible brush head, soft bristles, lightweight, durable) Perceived benefits of modified toothbrush (improved confidence in cleaning, enhanced ease of use)
Emotional and Psychological Responses after stroke	Fear, uncertainty, loss, and frustration, Hope, resilience, and determination to overcome dependency Feeling of burden and desire for independence. Adaptation and coping mechanisms (family support, strategies) adaptation
Healthcare and Rehabilitation Perspectives	Negative attitude towards dental health (lack of previous dental visits, practical approach, financial concerns, preference for other health concerns) Positive attitude towards dental health (willingness to undergo oral health check-up, recognition of importance) Adaptation to oral hygiene challenges (trial and error with alternative toothbrushes, unsatisfactory experiences, return to conventional brush)

Physical Impact and Persisting Challenges:

Stroke patients reported significant functional impairments, particularly in their affected dominant side, including weakness, pain, and fatigue, mainly in the arm and hand. Weakness was the most common issue due to brain damage affecting motor control, making daily tasks difficult. For example, one patient shared, "Yes, the right side is still weak but I can say that 60% of it is working now" (Male, 47 years).

Pain, either from the stroke or as a secondary issue due to abnormal movements and muscle overuse, was also frequently reported. One patient expressed, "Now shoulder pain is still there, but at least now I can move my fingers and hand to some extent and hold objects for some time" (Male, 53 years). Fatigue was another major challenge, as even simple tasks required increased energy, leading to quick exhaustion. "I feel more lethargic to do all these activities continuously," stated a patient (Male, 46 years).

Coordination difficulties and loss of fine motor skills made tasks like gripping and manipulating objects hard. One patient explained, "While eating, I need support from my left hand to stabilize my right hand so that the food

will reach my mouth without spilling" (Male, 57 years). Sensory changes affected their ability to judge grip strength, leading to further challenges. A patient described, "Suppose I want to lift something up or hold it, my mind cannot process what the next step is" (Female, 38 years).

Despite improvements, patients noticed slower recovery in their upper extremities. One shared, "My hand is still weaker than my leg even though I am doing regular physiotherapy" (Male, 48 years). Persistent issues in fine motor control led to challenges like prolonged pain when holding objects. "I can't hold the spatula for long; it's painful, and I cannot release it effectively" (Male, 53 years).

Oral Hygiene Difficulties and Assistive Device Needs:

Post-stroke patients faced challenges in brushing, such as difficulty manoeuvring the toothbrush, coordinating hand movements, and reaching all areas of the mouth. One patient reported, "The brush doesn't stay in my grip for long, and moving it around the mouth is not feasible" (Male, 41 years). Limited range of motion and fine motor control hindered cleaning effectiveness. "I just cannot move it like I used to; it doesn't reach the inner teeth properly," expressed another patient (Male, 53 years).

Patients also highlighted the need for assistive devices like modified toothbrushes with ergonomic designs. One participant suggested, "A handle that's easy to grip, with a flexible head and softer bristles, would be helpful" (Male, 52 years). The lack of available options and high costs were concerns, as one noted, "I searched online but found only expensive electric toothbrushes" (Male, 46 years).

Emotional and Psychological Responses After Stroke:

Patients expressed feelings of frustration and anxiety due to their lost independence. "Frustration overwhelms me as I struggle with tasks that were once effortless," shared a patient (Female, 43 years). Family support played a crucial role in helping them cope, with one stating, "My wife now looks over the business, household chores, and even helps with my grooming" (Male, 46 years).

Despite challenges, patients adopted adaptive strategies and maintained a positive outlook. One explained, "I found alternatives to daily tasks to stay independent, like using a bath robe instead of a towel" (Male, 46 years). Another emphasized resilience, saying, "I refuse to let my condition define me; there's a constant pep talk reminding me to keep trying" (Male, 57 years).

Stroke patients deprioritized dental care post-stroke due to financial concerns, fear, and focusing on critical rehabilitation. One noted, "My teeth never gave me trouble, so I didn't visit any dental clinic" (Male, 48 years). Financial burdens further limited access, as expressed: "I lost lakhs during COVID, now I feel like I lost every ray of hope" (Male, 52 years). Patients struggled with electric toothbrushes due to discomfort: "The speed is so high that I ended up with tingling sensations" (Female, 38 years). After difficulties, some returned to conventional brushes: "I returned to my normal toothbrush" (Female, 43 years).

Healthcare and Rehabilitation Perspectives:

Many stroke patients deprioritized dental visits before their stroke due to fear, underestimating oral health, or not making it a habit. One patient shared, "When I was a child, I went for a tooth extraction... I never visited a dental clinic... I didn't visit any recently" (Male, 46 years). Post-stroke, their focus shifts to critical rehabilitation, often neglecting dental care, as expressed by one patient: "My teeth never gave me trouble... now also I don't have any problem" (Male, 48 years). Financial concerns further deprioritize dental care: "During COVID, I lost lakhs...

now I feel like I lost every ray of hope” (Male, 52 years). Some tried electric toothbrushes but faced discomfort, preferring traditional ones. One patient noted, “The toothbrush handle is heavy... the speed... tingling sensation around gums” (Male, 53 years). After experimenting, another patient reverted to a conventional brush: “Finally, I returned to my normal toothbrush” (Male, 57 years).

DISCUSSION

The study identified four key themes regarding post-stroke patients’ oral care experiences: physical impact and persisting challenges, oral hygiene difficulties, emotional responses, and healthcare perspectives. Patients reported ongoing impairments such as weakness, pain, and coordination issues, affecting their ability to perform oral hygiene tasks. These findings align with literatures emphasizing the long-term impact of stroke on motor control and oral health^[7,8]. Participants expressed a need for assistive devices, specifically toothbrushes with larger handles, flexible heads, and soft bristles. Additionally, neglected oral care increased the risk of infections, including aspiration pneumonia and systemic conditions. Emotional distress and reliance on family support were prominent, with patients adopting adaptive strategies to cope. Dental care was often deprioritized post-stroke, focusing instead on critical rehabilitation needs^[9]. The study underscores the difficulties faced by the post stroke patients in maintaining oral hygiene and their needs regarding oral hygiene practice.

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