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Urinary and Faecal Incontinence Among Adults with Stroke in South-West Nigeria – A Cross Sectional Survey

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Abstract

Background: Urinary incontinence (UI) post-stroke has been identified as major problem among stroke survivors. The aftermath of faecal incontinence (FI) is always disturbing as it may lead to low self-esteem, caregiver stress and reduced rehabilitation participation. There is dearth of publication on urinary and faecal incontinence among adults with stroke in Nigeria.**Aim:** This study was designed to determine the prevalence as well as the association between UI and FI among adults with stroke in South-West Nigeria. **Methods:** Fifty-three participants were enlisted by consecutive sampling technique for this cross-sectional study. The Wexner/Cleveland Clinic Florida Incontinence score (CCFIS) and International Consultation on Incontinence Questionnaire Short Form (ICIQ-UI SF) were administered for data collection. Descriptive statistics of mean, standard deviation, percentages and frequency were used to summarize obtained data, inferential statistics of Chi-square was used to determine the association between UI and FI, and between gender and UI and FI among the participants. Also, Spearman's correlation was used to assess the relationship between age and duration of stroke and each of UI and FI. Alpha

was set at 0.05. **Results:** The mean age of the participants was 52.98±14.564 ranging from 24 to 80 years. The prevalence of UI was 69.8% while FI was 47.2% and there was no significant association between them. However, there was significant relationship between FI and duration of stoke. On the other hand, there was no significant relationship between UI and duration of stroke, but there was significant relationship between Age and FI and UI. **Conclusion:** The occurrence of UI and FI are independent of each other, patient age is associated with a risk of developing both UI and FI post stroke, while gender is not strong a determinant of post stroke UI and FI. Additionally, duration of stroke could significantly influence FI but not UI post stroke. More research on aetiology, incidence, and possible prevention and management of UI and FI post stroke is recommended.

Keywords: Urinary Incontinence, Faecal Incontinence, Stroke Patients

INTRODUCTION

Stroke is the second leading cause of death and one of the main causes of disability worldwide [(1)]. It is defined as a neurological deficit due to an acute focal injury of the central nervous system (brain, retina, or spinal cord) by a vascular cause [(2)]. A preventable disease with numerous modifiable risk factors including but not restrained to hypertension, diabetes mellitus, dyslipidaemia, obesity and smoking [(1)]. The distinct clinical feature of stroke is the sudden onset of a focal neurological deficit; hence, the time of onset is said to be the time that the patient was last known to be well [(2)]. Urinary incontinence (UI) is a common cause of concern after stroke, impacting at least 50% of stroke survivors [(3)] [(4)]. Whilst, UI may resolve swiftly and spontaneously, for many people, it becomes a tenacious problem, with up to a one-third of stroke survivors encountering some measure of UI at six or twelve months [(3)] [(5)]. Urinary incontinence (UI) post-stroke has been identified as degrading [(6)], humiliating and disheartening [(7)], and disgraceful [(8)] by stroke survivors. It has detrimental effect on day- to -day life and mental wellbeing [(9)], and places a significant burden on both stroke survivors [(8)] and their caregivers [(10)] [(9)]. Faecal incontinence (FI) is an involuntary loss of faeces which has been reported to be a customary hurdle after stroke [(11)]. The aftermath of faecal incontinence is always calamitous; viewed as a social taboo which may lead to poor self-esteem, despondency, caregiver stress and reduced rehabilitation participation [(12)]; however, there is a lack of clinical research into this upsetting condition in patients with stroke [(13)]. According Harari and colleagues' faecal

incontinence (FI) is usually due to functional impairments which affect patient ability to use the toilet rather than direct effects of the stroke lesion and it has been linked with worse outcomes following stroke [13]. Overflow FI may also occur in stroke patients due to constipation and faecal impaction [5]; with constipation occurring due to delayed colonic transit times as a result of reduced mobility [5]. Since faecal continence (FI) is maintained as a result of the integration of somatic pelvic motor coordination and visceral & sensory functions, FI may present as a result of an anal sphincter dysfunction, an abnormal rectal compliance, a decreased rectal sensation, or a combination of any of those abnormalities [14]. A loss of the higher cortical functioning, motor control and changes in level of consciousness put individuals at risk of incontinence [15]. The frontal lobe of the brain plays an important role for the voluntary control of urination [16] thus, patient with stroke having impaired total anterior circulation has more prevalence in terms of urinary incontinence than patient with either lacunar or posterior circulation strokes [17]. Also, the pattern of muscle activity that is necessary for voiding is synchronized by the pontine micturition centre [15], hence a damage to the pontine micturition centre due to stroke can lead to detrusor muscle hyper-reflexia causing urge and frequency symptoms [18]. Detrusor sphincter dyssynergia a rare occurrence; leads to a loss of coordination between bladder contractions and sphincter relaxation [15], therefore, patient who are affected shows symptoms of bladder contractions without sphincter relaxation justifying a need for catheterization to empty their bladder [19]. Globally; between 1990 and 2020 the incidence and prevalence of urinary incontinence (UI) after stroke were estimated as 44.3% [20] and 43.5 to 47% respectively [3] [21]. On the other hand, the incidence and prevalence of faecal incontinence after stroke were estimated as 30% and 11% [22] respectively. A study conducted by Brittain and colleagues reported that double incontinence- faecal and urinary incontinence was more than four times as high in stroke survivors than in the non-stroke population 4.3% vs. 0.9% [23]. However, there is little published studies on double incontinence (UI and FI) among adults with stroke in Nigeria. Hence, this study was designed to determine the prevalence as well as the association between UI and FI among adults with stroke in South-West Nigeria.

METHODS

Participant for this study were male and female patients with stroke aged >18 years attending inpatients and outpatient clinics in Osun and Oyo states (Bowen University

Teaching Hospital, Lagos University Teaching Hospital, UNIOSUN Teaching Hospital, Jericho Specialist Hospital, and Adeoyo Ring-road Hospital). However, Patients with impaired cognition and pre-existing ano-rectal/bladder related conditions prior to suffering a stroke were excluded. A consecutive sampling technique was used to recruit participants and Slovin's formula was employed to determine sample size n = 53 [24] for this study. Ethical approval was sought and obtained from Bowen University Teaching Hospital (BUTH) Health Research Ethics Committee (HREC). The questionnaires were administered to participants only after an informed consent was sought and obtained. An informed consent form stating the rationale, anonymity and confidentiality for the study was attached to the two questionnaires administered. The Wexner/Cleveland Clinic Florida incontinence score (CCFIS) which is the most-cited and most-translated FI score, consisting of a five-item score, with each item graded on a scale from 0 to 4, with a total score of 20. This score is validated and has been widely adopted because of its ease of use and reproducibility. Also, the International Consultation on Incontinence Questionnaire Short Form (ICIQ-UI SF) which consists of questions designed for evaluating the frequency, severity and impact of UI on health related quality of life was used. The ICIQ-UI SF is designed to assess participants over the past 4 weeks in respect to their urine incontinence. There are 4 questions to be asked while participants tick the most appropriate box that best describes their continence. The questionnaire has a score of 0-21 categorized as: Slight 1-5, Moderate 6-12, severe 13-18, and Very Severe 19-21. Descriptive statistics of mean, standard deviation, percentages and frequency distribution were used to summarize the data obtained from the questionnaire. Inferential statistics of Chi-square was used to determine the association between UI and FI, and the association between gender and UI and FI among adults with stroke in South-West Nigeria**.** Also, Spearman's correlation was used to assess the relationship between age and duration of stroke and each of UI and FI. Data were analysed using Statistical Programme for Social Sciences version 27.0 and Alpha level was set at 0.05.

RESULTS

Fifty-three questionnaires were researcher administered and duly completed. The mean age of the participants was 52.98±14.564 and range 24 to 80 years. Participants aged between 24 and 44 years were 18(34.0%), while 35.8% were between 45 and 64 years and 30.2% were between ages 65 and above. The gender distribution of participants was uneven as

(58.5%) were males and (41.5%) were females, and majority (66%) of participants were married. Also, 37(69.8%) of participants had at tertiary level of education, (22.6%) had secondary level and (7.5%) had at least primary level of education. The average duration of stroke among participants was 12.89±13.282 Months. A total of 28(52.8%) didn't reported FI while 25(47.2%) reported. Among participants who reported FI, 4(7.5%) had minor, 4(7.5%) had Mild, 8(15.1%) had moderate and 12(17.0%) had severe FI (Table 2). More than half of participants 37(69.8%) reported UI while 16 (30.2%) did not report UI. Among the participants who reported UI, 3(5.7%) had slight, 23(43.4%) Moderate, while 9(17.0%) severe and 2(3.8%) reported very severe UI (Table 2). There was no significant association between FI and each of sex (p=0.442), marital status (p=0.394) and Educational level (p=0.075) of participants. Additionally, there was no significant association between UI and each of sex (p=0.319), marital status (p=0.740) and Educational level (p=0.864) of participants. However, there was significant relationship between FI, UI and age of participants (p=0.046), (p=0.039) respectively. Furthermore, significant relationship was found between FI and duration of stroke among participants (p=0.003). However, there was no significant relationship between UI and duration (p=0.292); and lastly, significant association was not identified between UI and FI (p=0.443).

Table 1: Socio-demographic variables of the Participants

Socio-demographic Variables	Mean ±S.D	Minimum	Maximum
Age (Years)	52.98±14.564	24	80
Duration of stroke (Months)	12.89±13.282	1	60
	Frequency	**Percentage (%)**	
Gender			
Male	31	58.5	
Female	22	41.5	
Marital Status			
Single	8	15.1	
Married	35	66.0	
Others	10	18.9	
Age group (Years)			
24-44	18	34.0	
45-64	19	35.8	
65 & above	16	30.2	

Table 2: Faecal Incontinence (FI) and Urinary Incontinence (UI) among participants

Items		Frequency	Percentage (%)
FI Severity Score	**FI Scores**		
No Faecal incontinence	0	28	52.8
Minor	1-4	4	7.5
Mild	5-8	4	7.5
Moderate	9-12	8	15.1
Severe	13-20	9	17.0
U I Score	**U I Score**		
No Urinary incontinence	0	16	30.2
Slight	1-5	3	5.7
Moderate	6-12	23	43.4
Severe	13-18	9	17.0
Very severe	19-21	2	3.8

Table 3: Relationship between Age and both Urinary and Faecal Incontinence

Spearman rank coefficient		
	R	p-value
Faecal Incontinence	0.275	0.046*
Urinary Incontinence	0.285	0.039*

***Significant at p<0.05**

Table 4: Relationship between Duration of and both FI and Urinary Incontinence.

Spearman rank coefficient		
	R	p-value
Faecal Incontinence	-0.404	0.003*
Urinary Incontinence	-0.147	0.292

***Significant at p<0.05**

Table 5: Association between FI and UI among Participants

		U I				
		Present	**Absent**	**χ^2**	**Df**	**p-value**
Faecal Incontinence	Present	17	8	0.074	1	0.786
	Absent	20	8			

DISCUSSION

The sample size used for the study was 53 participants who were consecutively recruited from in-patients and out-patients' clinics in South-west Nigeria. This study found an FI prevalence of 47.2% in 53 participants, this is in agreement with findings by [13] that reported a 40% FI prevalence in a longitudinal study conducted in Copenhagen with a sample size of 935 patients with acute stroke, this further proves that FI is a common problem in this population.

According to studies by [3] [25] [21] the global prevalence of post stroke UI was 43.5% to 47% which is in contrast to the findings of this study which found a prevalence of 69.8% in 53 participants; they conducted a longitudinal survey in Copenhagen with a sample size of 935 participants, the vast difference in sample size could have accounted for this variance in results. Also, this study was a cross sectional survey and the participants were all contacted at the clinic while waiting for their treatment sessions, hence, the elicited responses from participants at that point of contact could be influenced by other factors such as barriers to the restrooms as common in many clinics in public hospitals in Nigeria. A study on the predictors of return to work among stroke survivors in South-West Nigeria conducted by Olaleye and colleagues reported the mean age of people with stroke to be 52.90±7.92 years [26], similarly, the mean age of the participants for this study was 52.98±14.564 (years). Additionally, this study found that there was an association between age of participants and post stroke UI which is similar to previous findings by [27] [28] [29]. Although, they reported a higher incidence rate of post stroke UI at age 75years and above, this study however, recorded a higher incidence rate of post stroke UI at age 62 to 80 years. The difference in age range occurrence could be due to aforementioned research work being a retrospective study conducted in Turkey with a significant difference in sample size of 163 participants; on the other hand, this study is a cross sectional survey with 53 participants only.

Nonetheless, this is an indication that UI is more likely to occur in people with stroke as they grow older. Furthermore, Enrique and colleagues also corroborated the above findings, when they reported that with the increase in age after stroke, the risk of developing UI and FI also increases [29]. This study also showed a positive significant correlation between advanced age and increasing incidence of both UI and FI in post stroke patient ($p=0.039$) ($p=0.046$) respectively. Pizza and colleagues also supported this and stated that incontinence was associated with age of patient with stroke ($P<0.05$). In a prospective study by Enrique and colleagues on incidence of and risk factors for new-onset

urinary and faecal Incontinence after acute stroke, they stated in the result that women were 1.7 times more likely to have UI after stroke than men, which showed that gender was a contributing factor to the incidence of post stroke urinary incontinence [29], the findings from this study also agrees with the report by [29]. However, this study recorded a higher incidence in males than in females but there was no significant association between gender and UI association.

Whitehead and colleagues found FI in the general population to be equally common in men and women in a study conducted on faecal incontinence in US adults: epidemiology and risk factor, Although, this study recorded a higher incidence of FI in male patients post stroke than females, it was not statistically significant [31], this was in agreement with findings by [11] who reported the lack of association between sex and post stroke FI. The result of this study showed a significant relationship between the duration of stroke and FI ($p<0.05$). Conversely, a longitudinal study conducted by [13] reported a gradual decline in prevalence of post stroke FI with time (duration). The difference in these findings could be attributable to the study design, while the reported study was a longitudinal study, this study was a cross-sectional survey in which participants' responses could have been influenced by their prevailing circumstances at the point of data collection, rather than existential, however, a longitudinal observational study is recommended.

Also**,** the result of this study showed no significant relationship between the duration of stroke and UI ($p=0.292$). Similarly, [30] in their prospective study which was conducted from 2004 to 2009 took into account the side of stroke and time of stroke entry into the study, yet there was no relationship between the duration of stroke and UI, hence, UI could be as a result of other factors. According to this study there was no statistical association between UI and FI incidence in patients post stroke ($p=0.786$). In contrast to this, in a longitudinal study by [3], a significant overlap of patients with UI and patients with FI was found, a test of relationship was conducted and high Spearman's rank correlation ($r=.84$, $P<.0l$) existed between sub-scores of initial urinary and fecal incontinence; they reported that 84% of patients with initial UI also had FI, and 98% of patients with initial FI also had UI, this may be because they did not discriminate between incontinence that began before or after stroke.

CONCLUSION

Incontinence is a silent thief of bladder and anal control, and self-esteem, which further jeopardizes the social, physical, functional and mental state of patients with stroke. This study reported occurrence of UI and FI as independent entities, with the occurrence of one not influencing the occurrence of the other. With increasing age of the patients, it predisposes them to increased risk of developing both UI and FI post stroke. Gender on the other hand, had no significant impact on the occurrence of post stroke UI and FI. The duration of stroke significantly influenced FI post stroke, but it had no relationship with UI post stroke. However, there is a need for a longitudinal observational study on FI and UI post stroke, to give more insight on the aetiology, incidence, prevalence, and effects on quality of life and possible preventive strategies.

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