



Arch. Bas. App. Med. 10 (2022):138– 141
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Research Article

Duration from Onset of Stroke to Index Episode of Physiotherapy Service

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Accepted: September 9, 2022

Abstract

Timely institution of rehabilitation can enhance return of neurological functions. Physiotherapy is a major constituent of stroke rehabilitation. The aim of the study was to investigate the duration from onset of stroke to the first (index) physiotherapy intervention received by stroke survivors. A review of 147 stroke cases seen at the physiotherapy department of a tertiary hospital between 2019 and 2020 was carried out. Patient's age, gender, highest education attainment, occupation, enrolment on National Health Insurance Scheme (NHIS), dates of onset of stroke and first physiotherapy intervention were documented. The duration (time lag) from date of onset of stroke and commencement of physiotherapy was computed. ANOVA, t-test and Pearson's correlation tests were used to analyze the data. The mean duration from dates of onset of stroke and index physiotherapy session (time lag) was 13.7 ± 15.0 days (1–62 days). There was no significant difference between the time lag of male (12.3 ± 14.1 days) and female (15.0 ± 15.7 days) stroke survivors as well as patients on NHIS (22.3 ± 19.4 days) and those not on NHIS (13.3 ± 14.6 days) and among different level of education ($p=0.76$). Age was not significantly correlated with time lag ($r=-0.11$; $p=0.19$). The duration between onset of stroke and commencement of physiotherapy could be considered as late. There is a need for advocacy for early commencement of physiotherapy post-stroke.

Key Words: commencement of physiotherapy, time lag, onset of stroke

INTRODUCTION

Stroke is a disabling global healthcare problem which is common and serious (Langhorne *et al.*, 2011). In several countries, stroke represents the second or third most common reason for death and one of the main causes of disabilities (Donkor, 2018; KatanandLuft, 2018). Although most patients with stroke survived the acute period of the illness, they are left with neurological deficits which result in long-term consequences for the patients and their families (Chohan *et al.*, 2019; Alawie *et al.*, 2018). Rehabilitation is a major part of stroke services and the objectives of poststroke care are to ease and encourage restoration of functioning and/or adaptation to disability, and to enable people with stroke to achieve optimal integration into the society (MohdNordin *et al.*, 2014; Langhorne *et al.*, 2011).

Early initiation of rehabilitation can add to the chance of recovery of neurological function, limit stroke-related disability and ameliorate long-term outcome as well as quality of life of stroke patients or survivors (Lindsay *et al.*, 2008; Quinn *et al.*, 2008; Whitehead and Baalbergen, 2019). The impact of timing of commencement of rehabilitation as a definite prognostic factor in rehabilitation outcomes had been identified (McGlinchey *et al.*, 2020; Langhorne *et al.*, 2018). Beginning early rehabilitative interventions have been

associated with better improvement in activities of daily living than when interventions were delayed (Paolucci *et al.*, 2000). The most impactful functional recovery occurs during the early weeks of treatment post-stroke and the effectiveness of stroke rehabilitation gradually diminishes after the first weeks of treatment (Branco *et al.*, 2019; Paolucci *et al.*, 2000).

Rehabilitation after a stroke begins at the acute phase of admission/hospitalization immediately the diagnosis of stroke is established and life-threatening problems are under control (Bernhardt *et al.*, 2009). Access to timely rehabilitation is regarded as an important facilitator in the processes of neurological recovery after stroke (Paolucci *et al.*, 2000). Like most conditions, rehabilitation of stroke survivors is a multidisciplinary approach and physiotherapy is a major component of stroke rehabilitation and management (Kwakkel *et al.*, 2004). Physiotherapist's assessment of a stroke patient within the first three days of admission is considered one of the indicators of effective stroke care (Intercollegiate Stroke Working Party, 2012). The Chartered Society of Physiotherapy (2018) recommended that stroke patients should commence physiotherapy within the first 24 hours of stroke onset. There seems to be a dearth of literature on the mean duration from the onset of stroke to the commencement of physiotherapy. Information on the average length of time between when a stroke occurred and when physiotherapy

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service commenced could be used by rehabilitation experts to develop policy to address any perceived or observed weakness in post-stroke rehabilitation process. This study therefore sought to investigate the duration between the onset of stroke and the first (index) physiotherapy intervention received by stroke survivors in a teaching hospital in Nigeria. Furthermore, the study aimed at finding out the differences between duration between male and female stroke survivors; stroke survivors of different occupation and education levels, as well the relationship between age and duration.

MATERIALS AND METHODS

This was a retrospective study of cases of stroke survivors, who received physiotherapy services between January 2019 and December 2020 at a tertiary hospital. The case files of the patients (including referral cards from the medical team) were retrieved from the Health Records Department of the Hospital and reviewed to obtain the dates of onset of stroke and the first encounter with a physiotherapist, which is denoted as the index episode of physiotherapy received by the patients. The information extracted were based on the history written down in the case files at the commencement of physiotherapy service as well as the referral details from the referring physicians. The date of commencement of physiotherapy was identified as the first documented contact between the physiotherapist and the patient, usually the day of assessment after the patient’s referral had been received and applicable fees paid.

Other information such as patient’s gender, age in years, occupation, highest level of education, enrolment status on the National Health Insurance Scheme (NHIS) were obtained from the case notes. The type of stroke as detailed in the referral card and the side of the body affected were also documented. This process was done by two of the authors and the information were entered into an Microsoft Excel spreadsheet. The third author ensured that the entries were correctly done and where there were doubts, queries were raised and attended to by revisiting the case files. The duration between dates of incidence of stroke and first (index) episode of physiotherapy was calculated and recorded in days. This duration was also described as time lag. The time lag was operationally defined as the time difference between the day stroke occurred and the day the stroke survivor received the first physiotherapy service (that is, the first recorded contact with a physiotherapist as detailed in the case file). To ensure privacy and protection of the patients, the records extracted from the patient’s case files were used only for research. An ethical approval was obtained from the University of Ibadan/University College Hospital Joint Ethical Review Committee (UI/EC/21/0372) before the study was commenced.

Analysis of Data: Descriptive statistics of mean, standard deviation frequencies and percentages were used to summarize the sociodemographic characteristics of stroke survivors. Independent t-test was used to test the differences between the time lag of male and female patients as well as the National Health Insurance Scheme NHIS enrollees and non-enrollees. One way ANOVA was used to test the difference in the time lag among patients with different highest educational qualifications. The Pearson correlation coefficient method was

used to test the relationship between age and time lag. The p value was said to be significant when $p < 0.05$.

RESULTS

One hundred and seventy-six (176) stroke patients were attended to at the facility within the period under review. Twenty-nine (29) patients who had incomplete records such as missing age, occupation and detailed history of commencement of physiotherapy were excluded from the study. Only one hundred and forty-seven (147) who had complete records were included in the study. There were more females (79; 53.7%) than males patients (68; 46.3 %). Majority of the patients were artisans (Table 1). Table 1 also showed the distribution of the stroke survivors based on the type of stroke and the side of affectation.

Table 1: Frequency distribution of socio-demographic and clinical parameters of participants

Parameter	Frequency (%)
Gender	
Female	79 (53.7%)
Male	68 (46.3%)
Education	
Primary	45 (30.6%)
Secondary	26 (17.7%)
Tertiary	69 (46.9%)
Postgraduate	7 (4.8%)
Occupation	
Artisans	51 (34.7%)
Business	7 (5.5%)
Civil servant	32 (21.8%)
Retired	35 (23.8%)
Others	22 (14.2%)
NHIS	
Enrollees	8 (5.4%)
Non-enrollees	139 (94.6%)
Type of stroke	
Ischaemic	132 (89.8%)
Haemorrhagic	15 (10.2%)
Side of body affected	
Right	68 (46.3%)
Left	79 (53.7%)

Abbreviations: NHIS National Health Insurance Scheme.

The mean age of the patients was 58.9 ± 14.1 years. There was no significant difference between the age of male (58.6 ± 14.7 years) and female (59.2 ± 13.8 years) participants ($p = 0.26$). The mean duration between dates of onset of stroke and first physiotherapy session (time lag) was 13.7 ± 15.0 days (median = 7 days ranged between 1 and 62 days). The time lag of male (12.3 ± 14.1 days) and that of female (15.0 ± 15.7 days) stroke survivors was ($p = 0.38$) were not significantly different. There was no significant correlation between age of the stroke survivors and time lag ($r = -0.11$; $p = 0.19$). There was, also, no significant difference ($p = 0.10$) between the time lag of patients on NHIS (22.3 ± 19.4 days) and the patients who were not on NHIS (13.3 ± 14.6 days) ($p = 0.10$). The time lag across different level of education was, similarly, not statistically significant ($p = 0.76$).

DISCUSSION

The main objective of this study was to find out the duration between onset of stroke and the commencement of Physiotherapy services. The study also sought to find out the differences between the time lag for the male and female stroke survivors as well as stroke survivors of different ages, education, occupation and enrolment status on the NHIS. The dearth of published works on the duration between when a stroke occurred and when the first physiotherapy service was commenced made it difficult to directly compare the outcome of this study with previous or similar results.

However, in a protocol published online, the Chartered Society of Physiotherapy (2018) hinted that physiotherapy intervention should commence within the first 24 hr (1 day) of stroke onset, a sharp contrast to the outcome of this study. The mean duration of about 14 days established in this study might be typical of low resource settings and could be referred to as late commencement of physiotherapy intervention among the stroke survivors in this study. Late commencement of rehabilitation, including physiotherapy, could result in delay in functional recovery and attainment of functional independence by stroke survivors (Latunji and Akinyemi, 2018). Rehabilitation initiated early following a stroke had been found to aid the reduction of complications and functional disabilities (Whitehead and Baalbergen, 2019). Early commencement of rehabilitation processes had been found to enhance return of neurological functions, reduce stroke-associated disabilities and improve long-term outcome and quality of life among stroke survivors (Lindsay *et al.*, 2008; Quinn *et al.*, 2008).

Gender difference between time lags was not statistically established in this study, although, the male stroke patients had shorter time lag than the female patients. In African setting, males have direct control over the choice of hospital attendance especially the time the attendance is initiated while women usually require the affirmation of their spouses to initiate hospital attendance. The initiation of rehabilitation could even be more delayed if women are in a situation where they could not effectively make decisions following the incidence of stroke.

Similarly, age did not have a significant relationship with time lag, although this retrospective study revealed that the older the patient, the shorter the time lag. Previous studies on health seeking behaviour had reported inconsistency among the elderly population (Gabran *et al.*, 2021). A reason why elderly patient had shorter time lag might be attributed to the likelihood of the families of elderly patients initiating early care on behalf of the patients. Elderly patients are dependent on members of their family for decision on health seeking behaviour (Gabran *et al.*, 2021). In most Nigerian cultures, delay in the initiation and commencement of treatment for an elderly patriarch or matriarch of a family might be considered as an act of irresponsibility on the part of the family members. A study, however, showed that elderly patients had poor health seeking behaviour (Omotosho *et al.*, 2010) thus might not commence rehabilitation early. A disturbing observation, which should be of interest to all healthcare providers, was that younger stroke survivors did not initiate physiotherapy early. It is important to pay attention to such outcome especially in the wake of published reports that showed that the new cases of stroke was more common among younger population in Africa (Owolabi *et al.*, 2009; 2018). A prospective study might be required to find out the reasons why the younger stroke survivors had a longer time lag.

The hypothesis that enrolment in the NHIS could facilitate the early commencement of care, including physiotherapy, was not statistically supported. Financial constraint could delay the initiation of physiotherapy even after a referral had been written by the attending physicians. Low income had been implicated as a reason why people might not seek healthcare (Latunji and Akinyemi, 2018). The NHIS enrolment meant that enrolees did not have to make payments before the commencement of physiotherapy thus allowing the patients to be seen at the earliest time possible. However, the patients who were enrolled on NHIS had longer time lag compared to those who were not enrolled. The fewer number of NHIS enrollees compared to the number of non-enrollees might have biased the outcome of the test of difference.

Another hypothesized facilitation of early initiation of physiotherapy care was acquisition of formal education especially higher degree. The assumption was that an acquisition of a higher level of education might result into better knowledge about rehabilitation of stroke and a consequential early uptake of rehabilitation. The outcome revealed that the duration between stroke onset and commencement of physiotherapy was not impacted by the educational attainment of the patients. Latunji and Akinyemi (2018) reported that less educated people had poorer health seeking behaviour. This might lead to longer duration between onset of disease and intervention. However, in this study, there was no well-defined pattern across the time lag, although patients with postgraduate qualification appeared to have a shorter duration compared to others. Educational qualification, therefore, did not significantly affect the time lag between onset of stroke and commencement of physiotherapy among the stroke survivors.

Study Limitation

This study was primarily focused on establishing duration and this informed the limitation of the study to a retrospective study design. A prospective study would be required to generate narration on the events that transpired between onset of stroke and commencement of physiotherapy, this would provide a better understanding of the reasons for the late commencement rather than making assumptions. The patient's clinical parameters were not the focus of this current study especially being a retrospective study. Subsequent study would be carried out prospectively focusing on the clinical parameters on presentation and how they may relate or associate with time lag.

CONCLUSION

The mean duration between the onset of stroke and commencement of physiotherapy was 2 weeks among stroke patients. This would be regarded as late commencement of intervention which may lead to delay in achieving early recovery of neurological functions with the attendant benefits of reduction in disability and improvement in quality of life. In order to achieve early commencement of physiotherapy after stroke, public enlightenment might be required to educate the populace on its benefits.

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