

## CLINICAL STUDIE / ETUDE CLINIQUE

## COMMUNITY REINTEGRATION AMONG STROKE SURVIVORS IN OSUN, SOUTHWESTERN NIGERIA.

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**ABSTRACT****Background**

Stroke is a major neurological problem and a leading cause of disability in the elderly in Nigeria. The incidence is increasing due to increasing risk factors, but many stroke victims now survive because of improved medical care. These survivors become community-dwellers after inpatient rehabilitation.

**Aims**

To assess community reintegration among stroke survivors and factors associated with it.

**Methods**

Cross-sectional survey study of patients who had survived six months or more after a stroke. Participants consisted of stroke patients attending the outpatient physiotherapy clinics of four selected government owned hospitals in Osun state, south-west Nigeria. Community reintegration was assessed using the Reintegration to Normal Living Index (RNLI) and walking ability was assessed using the Functional Ambulatory Categories (FAC).

**Results**

A total of 64 patients (43 men and 21 women, mean age 58.80±10.31 years) participated in this study. The mean RNLI was 63.8±14.3 for all the participants. Forty eight participants (75%) had slight disability (Score=2) and 16 participants (25%) had moderate disability (Score =3) using Modified Rankin Scale (mRS). Age, sex, physiotherapy duration, number of stroke occurrence and walking ability, were not associated with community reintegration. Post-stroke duration however had a significant association with community reintegration.

**Conclusion**

A significant proportion of chronic stroke survivors attending the selected outpatient clinics have mild to moderate level of reintegration and the longer the post stroke duration, the better the satisfaction with community reintegration.

**INTRODUCTION**

Stroke is the leading cause of disability among adults and frequently results in impaired mobility (11). It is a major public health problem with long-term physical, emotional, and relational consequences (15). A major component of the management of stroke is aimed at facilitating functional independence and community reintegration (16). One of the most important elements of stroke rehabilitation, and likely the most underestimated area, is community reintegration. Reintegration to normal living has been defined as the reorganization of physical, psychologic and social characteristics so that the individual can resume well-adjusted living after incapacitating illness or trauma (25). Specifically, the term community integration is used

to refer to re-establishing, to the degree possible, previously-existing roles and relationships, creating substitute new ones, and assisting people in making these changes (6). Failure to mobilize adequate support in the community can potentially negate the best efforts and results of stroke rehabilitation. Issues revolving around community and role integration can potentially have a profound impact on quality of life of the stroke survivor (3). For many people, the reintegration into community life marks the end point of their rehabilitation (14).

Regardless of regions in the world, the concept associated with re-integration to normal pattern of social and community life is one of key ideas in rehabilitation. Numerous international rehabilitation scholars have identified the importance of social and community integration to the well-being of people with disabilities (4,13,23).

Stroke is an important cause of morbidity and mortality in Africans. It is responsible for 0.9 to 4% of total admissions to hospitals and 0.5 to 45% of neurological admissions. In Nigeria, the incidence and prevalence of stroke have not been established. However, a report (19) from a Stroke Registry in Ibadan gave the annual incidence of stroke in Nigerians as 26 per 100 000 populations. A study (18) reported that frequency of stroke in hospital populations has varied from 0.9% to 4.0%, whereas among neurological admissions, stroke accounted for 0.5% to 45 % (17). Another study (24) reported the current prevalence of stroke in Nigeria as 1-14 per 1000.

Community reintegration has been studied in stroke in some countries (6, 21). Apart from studies on functional outcome (8) and quality of life (2, 7, 20) there has been to the best of our knowledge, no study on community reintegration of stroke survivors in Nigeria. Therefore the aims of this study were to determine the level of reintegration in community-dwelling individuals with stroke and to examine its relationship with the following selected variables; age, sex, post stroke duration, number of stroke occurrence, duration of physiotherapy and walking ability.

## **METHODS**

### **Participants**

The participants in the study were individuals who had a stroke 6 or more months previously recruited in the outpatient physiotherapy clinics of selected hospitals in the south-west of Nigeria. Participants for this study were community-dwelling stroke survivors recruited by purposive selection.

Four government-owned hospitals in Osun State, Nigeria were selected for this study. Osun state is located in the south western part of the country. The study was approved by the Ethics and Research Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. All potential participants were screened and had to fulfill the following criteria: first or second episode of unilateral stroke with hemiparesis, were ambulatory before stroke, were independent in ambulation with or without mobility /walking aid or were partially dependent on wheelchair for mobility, and were living at home. All potential participants received verbal and written information about the purpose and procedure of the study before giving informed written consent to participate in the study.

Exclusion criteria for this study include: history of other neurological pathology, conditions affecting balance, dementia or impaired vision. People with severe musculoskeletal conditions affecting the lower limbs were also excluded from the study.

Medical records were obtained to confirm the diagnosis of stroke from the information provided by the physician through the relevant medical and imaging results. Other information collected include; age, sex, duration of stroke, physiotherapy duration, side affected by the stroke, type of stroke and number of stroke occurrence.

### **Outcome measures**

The main outcome measure for this study was the Reintegration to Normal Living Index. This is an 11-item scale that covers areas such as participation in recreational and social activities, movement within the community, and how comfortable the individual is in his or her role in the family and with other relationships. It can be completed by either a patient or a significant other (25). The RNL Index is made up of 11 declarative statements (e.g. I move around my community as I feel necessary), including the following domains: indoor, community and distance mobility, self care, daily activity (work and school) recreational and social activities, general coping skills, family role(s), personal relationships, and presentation of self to others (4). A 4-point categorical scale (1-4: where 1=does not describe my situation, 2=describe my situation a little 3=describe my situation a lot, 4=fully describe my situation) was used (21) and yielded total values ranging from 11 to 44, with higher scores indicating better perception of reintegration.

The modified Rankin Scale (mRS) is widely used to assess global outcome after stroke. The scale describes 6 grades of disability after a stroke. Score of 5 denotes severe disability, bedridden; and score of 0 denotes no symptoms at all (24).

Functional Ambulation Categories (FAC) was used to assess the walking ability of the stroke survivors. The

FAC instrument is designed to provide information on the level of physical support needed by subjects in order to ambulate safely. It has been found to be reliable and valid in classifying hemiplegic gait (10). This instrument distinguishes among 6 levels of mobility ranging from dependence to independence. For the purpose of this study, FAC scores of 3 to 5 were used to recruit participants for this study. This is because participants in these categories do not require physical assistance from a therapist or carer.

### Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 16 program. Participants' clinical and socio demographic characteristics were analyzed descriptively in terms of mean, standard deviations, frequencies and percentages. The variables analyzed are: age, sex, post stroke duration, number of stroke occurrence, duration of physiotherapy, walking ability and side of stroke.

Pearson's correlation coefficient ( $r$ ) was used to determine the association between the reintegration to normal living index scores and the other variables. The measure of strength of association was defined by the value of the correlation coefficients obtained (.00-.25= little or no relationship, .25-.50 =fair relationship, .50-.75 =moderate relationship, > .75 =good to excellent relationship) (22).

## RESULTS

### Participant Characteristics

The ages of the participants ranged from 31 to 80 years (mean 58.80 $\pm$ 10.31). Forty three (67.2%) of the 64 participants were males while 21(32.8%) were females. Twenty nine had left sided hemiparesis. Nineteen used a mobility aid (wheel chair n=5, walking stick/ quad cane n=14). Thirty six (56.3%) of the participants had ischaemic stroke and the others had haemorrhagic stroke. Twelve participants have had 2 episodes of stroke and the others have had only one. Forty eight participants (75%) had slight disability (i.e., mRS score of 2) and 16 participants (25%) had moderate disability (i.e., mRS score of 3) using the Modified Rankin Scale (mRS). The mean RNLI score was 63.8 $\pm$ 14.3.

There were no significant differences between the RNLI scores of men and women (62.2 $\pm$ 13.2 and 65.4 $\pm$ 12.1), participants with ischaemic stroke (66.2 $\pm$ 11.6) and those with haemorrhagic stroke (64.4 $\pm$ 14.2) and between participants with left side affected (63.6 $\pm$ 11.4) and those with the right side affected (62.5 $\pm$ 14.2) (Table 1).

### Association between RNLI scores and other variables

There was a significantly moderate association between reintegration level and post stroke duration ( $P<0.05$ ). There was no statistically significant association between the RNLI scores and these variables; age, sex, number of stroke occurrence, physiotherapy duration and walking ability (Table 2).

### Association among the other variables

There were statistically significant associations between the number of stroke occurrence and age ( $P<0.01$ ), post stroke duration and physiotherapy duration ( $P<0.01$ ), post stroke duration and number of stroke occurrence ( $P<0.05$ ), physiotherapy duration and number of stroke occurrence ( $P<0.05$ ) (Table 3). Post stroke duration and physiotherapy duration displayed an excellent relationship, while relationships between the others were fair.

### Reintegration to Normal Living Index domain

The frequency of the scores obtained in each domain of the reintegration to normal living index (RNLI) is shown in table 4.

#### Indoor mobility

Twenty two (34.4%) participants did not have any form of limitation with mobility indoors. Twenty (31.3%) could not move around their homes as they feel is necessary and 8 (12.5%) reported they were a moderately satisfied with how they were able to move around their homes.

#### Community mobility

Twenty (31.3%) participants reported severe loss of all forms of mobility in the community. Eleven (17.2%) of the participants were not satisfied with how they move around the community as they feel is necessary.

#### Distance Mobility

Twelve (18.8%) participants were able to take trips out of town as they feel is necessary. Seven (10.9%) stroke survivors reported moderate loss of distance mobility and were not fully satisfied with mobility that involves taking a trip out of town.

#### Self-care

Poor satisfaction with how self-care needs were met was reported in 9 (14.5%) stroke survivors. Twenty

(32.3%) reported moderate satisfaction, while 11 (17.7%) expressed full satisfaction.

#### **Daily activity (work)**

Twenty five (39.7%) stroke survivors reported that they did not spend most of their days occupied in a work activity that is necessary or important to them. Seven (11.1%) reported full level of satisfaction with their daily activities.

#### **Recreational activities**

Four (6.3%) participants experienced full satisfaction with their participation in recreational activities. Twenty nine (46%) reported some level of satisfaction and 12 (19%) reported the least level of satisfaction.

#### **Social activities**

Nine (14.3%) participants reported that they were satisfied with their participation in recreational activities. Sixteen (25.4%) were not satisfied with their participation in recreational activities at all.

#### **Family role**

High level of satisfaction was reported in 14 (22.2%) participants for this domain. The lowest level of satisfaction was reported in 12.7% (8) of the participants and 21 (33.3%) participants expressed moderate level of satisfaction with roles in the family that met their needs and those of other family members.

#### **Personal relationships**

This domain showed the least number of participants (6) with the lowest level of satisfaction with their personal relationships. Seventeen (27%) participants were moderately comfortable with their personal relationships, while 14 (22%) were fully satisfied.

#### **Presentation of self to others**

Twelve (19%) participants were fully satisfied with this domain of the RNL index. Twenty eight (44.4%) stroke survivors expressed moderate satisfaction with how comfortable they are with themselves in the company of others. Seven (11.1%) stroke survivors reported no satisfaction.

#### **General coping skills**

Fourteen (22.6%) participants were not in any way satisfied with how they can deal with life's events as they happen. Eight (12.9%) reported moderate satisfaction in this domain, while 14 (22.6%) reported the least level of satisfaction.

### **DISCUSSION**

The result of this study shows that none of the community-dwelling people with stroke that participated in this study was fully satisfied (RNL score 100) with their reintegration to normal living. Most of the participant (75%) had mild to moderate deficits (RNL score 60-99). The mean RNL score of the participants is lower than that of the findings of previous studies (21,25) and it is contrary to the results of a study by Carter et al (5) who reported that more than half of their participants were fully satisfied with their reintegration into the community and the study by Hoffmann et al (9) who reported successful reintegration into the community for most of their participants.

The findings from this study also revealed that men had less satisfaction with their community reintegration than women. This is consistent with the findings of Pang et al (21) who reported that men had less satisfaction with community reintegration, though the difference was not statistically significant.

The findings of the present study showed that more participants (34.4%) expressed full satisfaction with indoor mobility than any other domain and this is closely followed by satisfaction with community mobility with 20 (31.24%) participants. These findings are in agreement with that of Hoffmann et al (9) who reported most participants were able to move around their home and community. But it is contrary to their findings that most participants were satisfied with their personal relationships. In our study, more participants (48.8%) reported the least level of satisfaction with the distance mobility domain than in any other domain and this is followed by the daily activity domain (39.7%). This is in agreement with the findings of Hoffmann et al (9), who reported that participants expressed the most difficulty with taking trips out of town. They also reported in their study that the ability to fill one's day with necessary or important activities was also of some concern to most participants in their study. Nigeria is a developing country with various economic and developmental challenges. One of these is making homes and buildings in public places accessible to people with disabilities. This may be a strong factor in the low score obtained in the distance mobility domain. A dominant finding in the study by Hoffmann et al was that social support and peer mentoring were invaluable. In our environment, the culture encourages extended family networks and kinships, so isolation of people with disabilities is not common. People encourage their relatives with disabilities to live with them in their homes or make provision for other members of the family to live with them if the person with the disability does not want to or is unable to leave his/her home.

Similarly, the mean of reintegration to normal living of stroke survivors with the RNL index was 2.40+ 2.5 which falls between the level II and III of RNL index meaning (describes my situation a little and describes my situation a lot respectively). This implies that the stroke survivors that were assessed in this study were not fully reintegrated into their respective community. This may be due to the fact that most outpatient stroke rehabilitation programs in this environment do not incorporate community ambulation and reintegration. Doing this will go a long way in improving the health status of the community-dwelling stroke survivors and the ability to live a satisfied and independent life in the community. Also it is common in our environment that people, who have a form of disability, are usually denied of their participation in social activities.

The findings of this study show a strong association between community reintegration and post stroke duration. Though this study found no association between walking ability and community reintegration, a study has established that patients with a long duration of stroke are better at walking and have better tolerance of body pain (1). This study was done in an outpatient stroke unit, and thus was done on patients in the post-acute stage. It thus indicates that walking is better with longer post stroke duration. The reasons for the finding in this current study may be similar to this, that those that have longer duration of stroke are better at walking and therefore have a higher level of satisfaction with community reintegration. A longer post-stroke duration allows more time for patients to cope with their disabilities (12).

The result of this study also shows a significant association between age and number of stroke occurrence. This is in line with a study in our country that shows that the frequency of stroke increases with advancing age (24).

In our environment, stroke rehabilitation is presently largely focused on the motor function of the stroke survivor. Programs incorporating reintegration into the community should be included in the rehabilitative intervention. Limitations of the findings in this study include a lack of generalisability to people who require physical assistant to walk, as all participants in this study can ambulate independently, with or without a cane or are dependent on wheelchair for mobility. Thus, patients with severe strokes are not likely to have been included. Also because of the pre-selected nature of the study, only those stroke survivors who attend the physiotherapy outpatient clinics of the selected hospitals were included in the study.

## CONCLUSIONS

Generally, despite the ability to move about independently, all the community-dwelling stroke survivors were not fully satisfied with their level of reintegration into the community and the longer the post stroke duration, the better the satisfaction with community reintegration.

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**Table 1: Characteristics of Participants**

Demographics	X / X ± SD (%)
Age (years)	58.80 ± 10.31
<b>Sex</b>	
Men	43(67.2)
Women	21 (32.8)
<b>Stroke characteristics</b>	
<i>Side of paresis</i>	
Left	29(45.3)
Right	35(54.7)
Post stroke duration (months)	19.61 ± 22.03
<b>Type of stroke</b>	
Ischaemic	36(56.3)
Haemorrhagic	28(43.7)
<b>Number of stroke occurrence</b>	

Once	52(81.2)
Twice	12(18.8)
<b>Mobility</b>	
Walking stick	14(21.9)
Wheel chair	5(7.8)
<b>Measures</b>	
Walking ability	3.06 ± 1.53
<b>RNLI Scores</b>	
Total score	63.8 ± 14.3
Male	62.2 ± 13.2
Female	65.4 ± 12.1
Ischaemic stroke	66.2 ± 11.6
Haemorrhagic stroke	64.4 ± 14.2
Left side affectation	63.6 ± 11.4
Right side affectation	62.5 ± 14.2

**Table 2: Relationship between reintegration to normal living index and other variables**

Variable	r
Age	.200
Post stroke duration	.604*
Physiotherapy duration	.401
Number of stroke occurrence	.098
Walking ability	.271

\*Statistical significance ( $p \leq 0.05$ )

**Table 3: Correlation among selected variables**

	Age	Post stroke duration	Physiotherapy duration	Number of stroke occurrence	Walking ability
Age	1.000	.116	.107	.456*	.167
Post stroke duration	.116	1.000	.882*	.296*	.233
Physiotherapy duration	.107	.882*	1.000	.283*	.130
Number of stroke occurrence	.456*	.296*	.283*	1.000	.099
Walking ability	.167	.233	.140	.099	1.000

\*Statistical significance ( $p \leq 0.05$ )

**Table 4: Ratings for the Domains of the Reintegration to Normal Living Index (RNLI)**

	1		2		3		4	
	n	%	n	%	n	%	n	%
Indoor mobility	20	31.3	8	12.5	14	21.9	22	34.4
Community mobility	22	34.4	11	17.2	11	17.2	20	31.2
Distance Mobility	31	48.8	14	21.9	7	10.9	12	18.8

Self care	9	14.5	22	35.5	20	32.3	11	17.7
Daily activity (work and school)	25	39.7	15	23.8	16	15.4	7	11.1
Recreational activities	12	19.0	29	46.0	18	28.6	4	6.3
Social activities	16	25.4	22	34.9	16	25.4	9	14.3
Family role	8	12.7	20	31.7	21	33.3	14	22.2
Personal relationships	6	9.5	26	41.3	17	27.0	14	22.0
Presentation of self to others	7	11.1	16	25.4	28	44.4	12	19.0
General coping skills	14	22.6	30	48.4	8	12.9	10	16.1

1 = does not describe my situation, 2 = describes my situation a little, 3 = describes my situation a lot, 4 = fully describes my situation

## REFERENCES

1. APRILE I, PIAZZINI DB, BERTOLINI C, CALIANDRO P, PAZZAGLIA C, TONALI P, PADUA L. Predictive variables on disability and quality of life in stroke outpatients undergoing rehabilitation. *Neuro Sci.* 2006; 27: 40-46.
2. AKINPELU AO, GBIRI CA. Quality of life of stroke survivors and apparently healthy individuals in southwestern Nigeria. *Physiotherapy Theory and Practice.* 2009;25(1) 14 - 20
3. BHOGAL SK, TEASELL RW, FOLEY NC, SPEECHLEY MR. Community reintegration after stroke. *Topics in Stroke Rehabilitation.* 2003;10:107-129
4. CARDOL M., DE HAAN RJ., VAN DEN BOS GA, DE JONG BA, DE GROOT IJ. The development of a handicap assessment questionnaire: The impact on participation and autonomy. *Clinical Rehabilitation.* 1999;13(5)411-9.
5. CARTER BS, BUCKLEY D, FERRARO R, RORDORF G, OGILVY CS. Factors associated with reintegration to normal living after subarachnoid hemorrhage. *Neurosurgery.* 2000;46:1326-34
6. DIJKERS M. Community integration: Conceptual issues and measurement approaches in rehabilitation research. *Journal of Rehabilitation Outcome Measurement.* 1999;3(1)39-49.
7. FATOYE FO, KOMOLAFE MA, EEGUNRANTI BA, ADEWUYA AO, MOSAKU SK, FATOYE GK. Cognitive impairment and quality of life among stroke survivors in Nigeria. *Psychological Reports.* 2007;100(1);3:876-882
8. HAMZAT TK, PETERS GO. Motor function and participation among Nigerian stroke survivors: 6-Month follow-up study. *NeuroRehabilitation.* 2009;25(2)137-142
9. HOFFMANN T, MCKENNA K, COOKE D AND TOOTH L. Outcomes after stroke: Basic and instrumental activities of daily living, community reintegration and generic health status. *Australian Occupational Therapy Journal.* 2003;50(4)225-233
10. HOLDEN MK, GILL KM, MAGLIOZZI MR. Clinical gait assessment in the neurologically impaired: reliability and meaningfulness. *Phys Ther.* 1984;64:38-40.
11. KOLLEN B, KWAKKEL G, LINDEMAN E. Time dependency of walking classification in stroke. *Phys Ther.* 2006; 86:618-625.
12. KONG K H, YANG S Y. Health-related quality of life among chronic stroke survivors attending a rehabilitation clinic. *Singapore Med J.* 2006; 47(3)213-218.
13. LEE Y, MCCORMICK B, AUSTIN D. Toward an Engagement in Social Support: A Key to Community Integration in Rehabilitation. *World Leisure.* 2001;2:25-30
14. LORD SE AND ROCHESTER L. Measurement of Community Ambulation After Stroke. *Stroke.* 2005;36:1457-1461
15. LYNN K, NICHOLE K, HARRIET C; DENISE A. Returning to work after the onset of illness: experiences of right hemisphere stroke survivors. *Rehabilitation Counseling Bulletin,* 2005: <http://www.accessmylibrary.com/article-1G1-133946252/returning-work-after-onset.html> (accessed on Nov 11 2009).
16. MAYO N E, WOOD-DAUPHINEE S, GAYTON RD, Carlton J, BATTERY J and Tamblin R. There's No Place like Home: An Evaluation of Early Supported Discharge for stroke. *Stroke.* 2000;31;1016-1023
17. OGUN SA, OJINI FI, OGUNGBO B, KOLAPO KO, DANESI MA: Stroke in South West Nigeria. A 10-year review. *Stroke.* 2005;36:1120-2.
18. OJINI FI, DANESI MA. Pattern of neurological admissions at the Lagos University Teaching Hospital. *Nig J Clin Pract.* 2003;5:38-41.
19. OSUNTOKUN BO, BADEMOSI O, AKINKUGBE OO, OYEDIRAN AB, Carlisle R. Incidence of stroke in an African City: results from the Stroke Registry Ibadan, Nigeria, 1973-1975. *Stroke,* 1979;10:205-207.
20. OWOLABI MO, OGUNNIYA A. Profile of health-related quality of life in Nigerian stroke survivors.

- European Journal of Neurology. 2008;16(1)54-62
21. PANG MYC, ENG JJ, MILLER WC .Determinants of satisfaction with community Reintegration in older Adults with Chronic Stroke: Role of Balance Self-Efficacy. *Physical Therapy*. 2007;87:282-291.
  22. PORTNEY LG, WATKINS MP. *Foundations of Clinical Research: Applications to Clinical Practice*. 3rd edition. Upper Saddle River, NJ: Prentice Hall, 2009; 523-538.
  23. TRIGG R., WOOD, VA., HEWER, R. L. Social reintegration after stroke: The first stages in the development of the Subjective Index of Physical and Social Outcome (SIPSO). *Clinical Rehabilitation*. 1999; 13: 341-353.
  24. WAHAB KW. The burden of stroke in Nigeria. *International Journal of Stroke*. 2008;3:290-292
  25. WILSON JTL, HAREENDRAN A, HENDRY A, POTTER J, BONE I, MUIR KW. Reliability of the modified Rankin Scale across multiple raters: benefits of a structured interview. *Stroke*. 2005; 36: 777-781
  26. WOOD-DAUPHINEE SL, OPZOOMER A, WILLIAMS JI, MARCHAND B, SPITZER WO. Assessment of global function: the Reintegration to Normal Living Index. *Arch Phys Med Rehabil*. 1988;69:583-590.