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Original Research

Relationship between community integration and life satisfaction among stroke survivors dwelling in rural communities of Southwest, Nigeria

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ABSTRACT

Aim: The appraisal of disability and life post stroke is influenced by survivors' environment and culture; though little or no information exists for survivors that are rural community dwellers. Therefore, this study assessed the relationship between community reintegration and life satisfaction (LSAT) of stroke survivors dwelling in rural communities of the southwest, Nigeria. **Materials and Methods:** Using a convenience sampling technique, 60 stroke survivors responded to this cross-sectional survey yielding a response rate of 79%. A structured self-administered questionnaire on reintegration to normal living and LSAT after stroke was used to assess community reintegration and LSAT of respondent between the periods of January 2015 and October 2015. The procedure was explained to consented respondents and data were subsequently obtained. Data were analyzed using descriptive statistics and inferential statistics. *P* value was set at <0.05. **Results:** The respondents were 35 males and 25 females with an overall mean age of 57.1 ± 10.4 years and post stroke duration of 22.6 ± 12.9 months. The mean reintegration to normal living index (RNLI) score of the respondents was 66.9 ± 21.6 with over 55% of them having moderate to full community reintegration. The respondents had an overall LSAT score of 3.7 ± 1.2. Less than 32% of the respondents were dissatisfied with life and this was observed to be marked in vocation (3.2 ± 1.8) and sexual life (2.7 ± 1.8) domains. Neither of the respondents' sociodemographic and clinical characteristics were significantly association with each of RNLI (except side of affectation) and satisfaction with life. However, there was a significant positive relationship between reintegration to normal living and LSAT of respondents ($r = 0.539$, $P = 0.001$). **Conclusion:** Stroke survivors dwelling in rural communities of the southwest, Nigeria had low to moderate level of reintegration into everyday activities and were dissatisfied with life after stroke. Community integration after stroke was significantly associated with a side of stroke affectation and significantly related to LSAT after stroke.

KEY WORDS: Community reintegration, life satisfaction, Nigeria, relationship, rural, stroke survivors

INTRODUCTION

Stroke is one of the most common and leading causes of disability in adults [1,2]. Although, there has been a decline in stroke incidence in high-income countries by over 40% in the last four decades, however over similar period, low- and middle-income countries such as Nigeria experienced a double increment in incidence. For most stroke survivors, moving from acute care to inpatient rehabilitation and to community rehabilitation is a sign of progressive recovery and increases their hope for the future. Community reintegration is regarded as that final stage within the continuum of stroke care [3]. For stroke survivors, it can be described as being able to go back to the previous level of occupational performance or the highest level of occupational performance possible after cerebrovascular accidents. It focuses on those activities that will maximize the probability of stroke survivors feeling empowered and achieving their full rehabilitation potential [3,4]. Hence, community reintegration is of utmost importance as stroke survivors face a serious challenge of integrating themselves into the community

due to various level of disability. Numerous studies have shown that the various sequel of stroke such as motor and cognitive impairments, self-care difficulties, and abnormal gaits pose as obstacle to return to meaningful living. For those who survive a stroke, regaining their ability to participate in the previous life roles has a direct impact on their perceived quality of life [5].

Substantial literature subsists regarding terms such as life satisfaction (LSAT) and quality of life [6]. LSAT is generally agreed to be a broad, multidimensional concept with both subjective and objective components [7]. For our study, LSAT refers to the universal measure of quality of life which denotes a general subjective assessment of an individual's life and does not inevitably represent satisfaction with all aspects of life [8,9]. There is usually a decline observed with LSAT immediately following a life-altering event which eventually improves over time. This improvement, however, can take many years and is not always a return to pre-injury baseline. Previous studies on LSAT have reported varying results regarding satisfaction with life post stroke [5,10,11]. Differences in instrumentation, settings and time in recovery have led to inconsistent conclusions. Cognitive and motor independence, adjustment to disability, age at onset, and post stroke duration have been implicated to influence satisfaction with life post stroke. An old study by Viitanen *et al*. [12] reported that over 60% of stroke survivors were dissatisfied with life 4-6 years after stroke incident. Stagnation in recovery of functioning after long term duration with stroke has been linked with decreased LSAT among survivors [13]. Functioning at maximal independence possible is necessary to pursue occupation (or activities) that bring meaning and purpose which ultimately affects LSAT. It is assumed that the sequelae of stroke as it affects survivors are similar globally; however, the interpretation as well as appraisal of disability and life post stroke is influenced by survivors' environment and culture. Vast literature exists on reintegration to normal living after stroke among urban and semi-urban community dwelling stroke survivors with little or no information among survivors that are rural community dwellers [14,15]. Consequently, this study set to determine the level of community reintegration and LSAT among rural community dwelling stroke survivors, as well as the factors that affect community reintegration and LSAT among the stroke.

MATERIALS AND METHODS

Participants

Stroke survivors resident in two rural communities of Modakeke in Ile-Ife, Osun state and Apete in Ibadan, Oyo state were invited to participate in this cross-sectional survey by means of convenient sampling technique. Participants were purposively selected from two tertiary health facilities; Obafemi Awolowo University, Ile-Ife and University College Hospital, Ibadan that provide intensive rehabilitative services for stroke survivors in the southwest, Nigeria.

Inclusion Criteria

Eligibility criteria involved being a stroke survivors with a clinical diagnosis of stroke with a duration that is not <6 months and had completed all active stroke rehabilitation.

Exclusion Criteria

Stroke survivors with a history of coexisting neurological pathology and serious musculoskeletal conditions affecting the lower limbs were excluded from this study.

Instrument

A three sectioned self-administered questionnaire on community integration and LSAT after stroke was used as survey instrument [Appendix]. The first section of the questionnaire sought information on sociodemographic and clinical characteristics of the respondents (such as gender, age, and post stroke duration). This section was further supplemented with a data sheet from the participants' medical records. The second section used the reintegration to normal living index (RNLI) [16] to assess the degree to which respondents achieve reintegration into normal social activities. The third section of the questionnaire sought information on respondents' satisfaction with life with the LSAT Questionnaire (LISAT-11) [17].

Procedure

The Ethics and Research Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria gave approval for this study. The information of participants that meets the criteria for the study were retrieve from the medical records of the Rehabilitation Departments of the Obafemi Awolowo University Teaching Hospitals, Ile-Ife and University College Hospital, Ibadan. Subsequently, the participants were contacted via telephone for possible participation. The purpose of the study was explained verbally to respondents. This was further expounded with a written subject information sheet attached to the instrument for data collection which was distributed to the respondents in their respective homes. Eligible volunteers gave verbal and signed consent. Using a purposive convenient sampling, 50 and 30 copies of the questionnaire were administered to eligible participants by hand and (returned) postal mail, respectively. A total of 60 eligible volunteers responded, 49 via hand and 11 by postal mail, thereby yielding a response rate of 75%. The majority of the questionnaires distributed by hand were collected on site while those sent via postal mail were returned through returned mail/envelope attached with the sent mail. 19 copies of the questionnaires were not returned while a copy was invalidated because significant part of the questionnaire was omitted and inappropriately filled. Data were collected between the periods of January 2015 and October 2015.

Data Analysis

Descriptive statistics of mean and percentages were used to summarize data. Inferential statistic of Chi-square was used to determine the association of participants' sociodemographic characteristics and community reintegration as well as the association of LSAT and sociodemographic characteristics. Furthermore, Spearman rho's correlation analysis was used to assess the relationships between reintegration to normal living and LSAT. Effect size in RNLI and LISAT score of the two rural

communities was determined with independent *t*-test. Based on a total RNLI score, community reintegration was categorized as severe restriction (for a raw score of <60), mild to moderate reintegration (for a raw score of 60-99) and full reintegration (for a raw score of 100) [18]. Similarly, LSAT was categorized as dissatisfied (for a raw score of 1-4) and satisfied (for a raw score of 5-6). A total LSAT score is computed as the mean of the item scores which range from 1 to 6 [17]. Data were analyzed using SPSS version 20.0 (SPSS Inc., Chicago, Illinois, USA).

RESULTS

The mean age of the respondents was 57.1 ± 10.4 years with the range of 24-70 years. More males compared to females (58.3% vs. 41.7%) responded in this survey. The sociodemographic and clinical characteristics of the respondents are presented in Table 1. The majority of the respondents were right hand dominant (96.7%), had ischemic stroke (73.3%), and were from the 45 to 65 age group (61.7%) [Table 1]. The results showed that the respondents achieved a mean reintegration score of 66.9 ± 21.6% with the lowest score occurring in the domain of recreational (57.1 ± 28.4%) and social activities (57.1 ± 29.8%) while the highest scores were in the presentation of self (73.3 ± 28.3). 10% of the respondent achieved full integration on the RLNI [Table 2]. The respondent's mean LSAT score was 3.7 ± 1.2 [Table 3]. Majority of the respondents were dissatisfied with all domains except with family life (61.7%) and partner relationships (55.0%). The highest LSAT score was achieved by the respondents in family life with a mean score of 4.7 ± 1.5, while they were least satisfied with their sexual life with a mean score of 2.7 ± 1.8. The respondents' sociodemographic and clinical characteristics showed no significant association with each of RNLI (except side of affectation) and LSAT [Tables 4 and 5]. However, contingency table shows that more male and married stroke survivors as well as participants with ischemic and first episodic stroke had full community integration [Table 4]. There was significant relationship ($r = 0.539$; $P < 0.001$) between RNLI and LSAT of the respondents. Modakeke community was found to have effect sizes of 7.1 ± 0.8 and 2.4 ± 0.35 in RNLI and LISAT score, respectively, more than Apete community.

Table 1: Sociodemographic and clinical characteristics of the respondents

Variables	Number of respondents (%)
Age group (years)	
<45	8 (13.3)
45-65	38 (63.3)
>65	14 (23.3)
Gender	
Male	35 (58.3)
Female	25 (41.7)
Marital status	
Married	49 (81.7)
Not married	11 (18.3)
Hand dominance	
Right	58 (96.7)
Left	2 (3.3)
Type of stroke	
Ischemic	44 (73.3)
Hemorrhagic	16 (26.7)
Recurrence of stroke	
First	52 (86.7)
Recurrent	8 (13.3)
Side of paresis	
Left	26 (43.3)
Right	34 (56.7)
Post stroke duration	
Short term	28 (46.7)
Long term	32 (53.3)
Community	
Apete	26 (43.3)
Modakeke	34 (56.7)

DISCUSSION

This study is the first to investigate and analyze community reintegration and LSAT among 60 stroke survivors dwelling

Table 2: Distribution of scores of respondents across domains of reintegration to normal living index

Domain	*N* (%)				Mean±SD
	D	P	MS	F	
Indoor mobility	11 (18.3)	13 (21.7)	10 (16.7)	26 (43.3)	71.3±29.4
Community mobility	11 (18.3)	20 (33.3)	10 (16.7)	19 (31.7)	65.4±28.0
Distant mobility	16 (26.7)	13 (21.7)	10 (16.7)	21 (35.0)	65.0±30.6
Self-care	9 (15.0)	15 (25.0)	10 (16.7)	26 (43.3)	72.1±28.4
Daily activities	20 (33.3)	15 (25.0)	8 (13.3)	17 (28.3)	59.2±30.5
Recreational activities	19 (31.7)	18 (30.0)	10 (16.7)	13 (21.7)	57.1±28.4
Social activities	20 (33.3)	19 (31.7)	5 (8.3)	16 (26.7)	57.1±29.8
Family roles	11 (18.3)	14 (23.3)	8 (13.3)	27 (45.0)	71.3±29.8
Personal relationship	10 (16.7)	17 (28.3)	6 (10.0)	27 (45.0)	70.8±29.5
Presentation of self	8 (13.3)	16 (26.7)	8 (13.3)	28 (46.7)	73.3±28.3
General coping skills	9 (15.0)	16 (26.7)	6 (10.0)	29 (48.3)	72.9±29.2
Mean reintegration scores	66.9±21.6				

SD: Standard deviation, D: Does not describe my situation, P: Partially describe my situation, M/S: Mostly/sometimes describe my situation, F: Fully describes my situation

Table 3: Frequency distribution of respondents' level of LSAT across domains

Variable	Dissatisfied (%) 1-4	Satisfied (%) (5-6)	Mean±SD LISAT-score
Life as a whole	41 (68.3)	19 (31.7)	3.3±1.8
Vocation	42 (70.0)	18 (30.0)	3.2±1.8
Finance	38 (63.3)	22 (36.7)	3.4±1.8
Leisure	33 (55.0)	27 (45.0)	4.1±1.6
Contact with friends /acquaintances	41 (68.3)	19 (31.7)	3.6±1.0
Sexual life	46 (76.7)	14 (23.3)	2.7±1.8
Self-care	31 (51.7)	29 (48.3)	4.2±1.6
Family life	11 (18.3)	49 (61.7)	4.5±1.5
Partner relationship	27 (45.0)	33 (55.0)	4.0±1.9
Physical health	38 (63.3)	22 (36.7)	3.9±1.5
Psychological health	40 (66.7)	20 (33.3)	3.6±1.6
Mean LSAT	3.7±1.2		

SD: Standard deviation, LSAT: Life satisfaction

Table 4: Frequency distribution of RNLI across respondents' variables

Variables	RNLI				
	Low	Mild to moderate	Full	χ^2	*P* value
Age group (years)					
<45	5 (8.3)	2 (3.3)	-		
45-65	11 (18.4)	22 (36.7)	5 (8.3)		
>65	9 (15.0)	5 (8.3)	1 (1.7)	7.40	0.11
Gender					
Male	14 (23.3)	17 (28.3)	4 (6.7)		
Female	11 (18.3)	12 (20.0)	2 (3.3)	0.23	0.892
Marital status					
Married	21 (35.0)	22 (36.7)	6 (10.0)		
Not married	4 (6.7)	7 (11.7)	-	2.09	0.352
Type of stroke					
Ischemic	20 (33.3)	18 (30.0)	6 (10.0)		
Hemorrhagic	5 (8.3)	11 (18.3)	-	4.63	0.099
Recurrence of stroke					
First	22 (36.7)	24 (40.0)	6 (10.0)		
Recurrent	3 (5.0)	5 (8.3)	-	1.35	0.510
Side of paresis					
Left	13 (21.7)	8 (13.3)	5 (8.3)		
Right	12 (20.0)	21 (35.0)	1 (1.7)	7.60	0.022
Post stroke duration					
Short term	11 (20.0)	13 (21.7)	4 (6.7)		
Long term	14 (21.7)	16 (26.3)	2 (3.3)	1.08	0.584
Community					
Apete	14 (53.8)	10 (38.5)	2 (7.7)		
Modakeke	11 (32.4)	19 (55.9)	4 (11.8)	2.80	0.132
Total	25 (41.7)	29 (48.3)	6 (10.0)		

χ^2: Pearson Chi-square value, *P* value significant at $P<0.05$.
RNLI: Reintegration to normal living index

Table 5: Distribution of respondents' LSAT score across respondents' variables

Variables	Mean LSAT score			
	Dissatisfied (%)	Satisfied (%)	X^2	*P* value
Age group (years)				
<45	4 (6.7)	3 (5.0)	0.579	0.749
45-65	26 (43.3)	12 (20.0)		
>65	11 (18.3)	4 (6.7)		
Gender				
Male	21 (21)	14 (23.3)	2.696	0.101
Female	20 (33.3)	5 (8.3)		
Marital status				
Married	33 (55.0)	16 (26.7)	0.120	0.729
Not married	8 (13.3)	3 (5.0)		
Type of stroke				
Ischemic	32 (53.3)	12 (20.0)	1.472	0.225
Hemorrhagic	9 (15.0)	7 (11.7)		
Recurrence of stroke				
First	36 (60.0)	16 (26.7)	0.145	0.703
Recurrent	5 (8.3)	3 (5.0)		
Side affected by CVA				
Left	18 (30.0)	8 (13.3)	0.017	0.896
Right	23 (38.3)	11 (18.3)		
Post stroke duration				
Short term	20 (33.3)	8 (13.3)	0.232	0.630
Long term	21 (35.0)	11 (18.3)		
Community				
Apete	23 (67.7)	11 (32.4)		
Modakeke	23 (88.5)	3 (11.5)	4.66	0.356
Total	41 (68.3)	19 (31.7)		

χ^2: Pearson Chi-square value; *P* value significant at $P<0.05$.
CVA: Cerebrovascular accident, LSAT: Life satisfaction

in two different rural communities in the southwest, Nigeria. Results of this study showed that majority of the rural community dwelling stroke survivors had low to moderate level of reintegration into everyday activities. 10% of the study participants were able to achieve full communal integration after rehabilitation. This is consistent with the findings of Pang *et al*. [19], Béthoux *et al*. [20] but in contrast with the findings of Carter *et al*. [21] and Hoffmann *et al*. [22]. The differences observed in the mean RNLI scores of the above studies compared with this study could be due to the fact that some of the participants had multiple stroke episodes before recruitment and the lower mean post stroke duration of 22.6 ± 12.9 months; though this study found no association between post stroke duration and community reintegration. As post stroke duration increases for survivors with significant impairment, burden of care with regards to treatment cost surges thereby affecting compliance with attendance of outpatient rehabilitation service. Despite the fact that multidisciplinary stroke unit approach has been implicated for the efficient/effective management of stroke, one out of the two tertiary hospitals from which participants were recruited had some essential plan of care such as occupational therapy and social work services lacking. All of these stated reasons might have resulted in the observed low RNLI score of the study participants.

The findings further revealed that participants experienced the most difficulty with engagement in necessary or important daily activities, social and recreational activities while the presentation of self and general coping skills present the least obstacle for participation. Due to the various sequelae associated with stroke, survivors have been posited to be four times more likely to have restricted participation in an activity that they valued because of their health [23]. Although, this might not in itself stand as the major barrier to re-integration into previous societal roles and functions by stroke survivors; environment factors such as physical accessibility of the environments; transportation services; educational information which oftentimes are lacking in rural communities, have also been implicated to influence reintegration after stroke.

This study also found that majority of the stroke survivors are dissatisfied with all domains of LISAT except family and partner relationship. Dissatisfaction was most evident in respondents' sexual life. The findings are in consonance with the work of Boosman *et al*., [24] and Aström *et al*. [25]. Over 80% of this study participants are married; this could have aided or influenced the satisfaction they experienced with their family and partner relationships as family members tends to rally round to support people living with functional disabilities [26]. An interesting result from this study is that the satisfaction expressed by the stroke survivors with partner relationship did not translate to satisfaction with sexual life. This suggests that spousal relationship and sexual life can be interpreted as different constructs that need robust attention/intervention during rehabilitation [27,28].

The findings from this study further showed that the stroke survivors' age, gender, marital status, stroke type, post stroke duration and episodes of stroke were not associated with reintegration to normal living after stroke affectation. This is in consonance with the report of Obembe and Fasuyi [29]. The above authors, however, reported an association between community reintegration and post stroke duration. The differences in our findings compared to that of Obembe and Fasuyi [29] may be due to the fact that the stroke survivors dwell in rural communities. The side of stroke affectation was found to be significantly associated with community integration in this study. Often times, the disability imposed by stroke places a restriction on the functional use of the dominant side of the survivor [30,31].

LSAT after stroke event was found to have a positive relation with community reintegration. This result is contrary to the findings of Aström *et al*. [25], but in consonance with that of Hamzat *et al*., [30]; Obembe and Fasuyi [29] as well as Hartman-Maeir *et al*. [32]. Participating in desired occupation after stroke by rural community dwelling survivors brings purpose, meaning, and enjoyment [33] which could invariably influence satisfaction with life after stroke.

CONCLUSION

Stroke survivors dwelling in rural communities of the southwest, Nigeria, had low to moderate level of reintegration into everyday activities and were dissatisfied with life after stroke. Community integration after stroke was significantly associated by side of stroke affectation and significantly related to LSAT after stroke. Replication of similar study in rural communities in other regions of the country with different cultural background is suggested.

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Appendix

Community Reintegration and Life Satisfaction after Stroke Questionnaire

This questionnaire is designed to assess your reintegration into the community and life satisfaction after experiencing stroke. Your participation in this study is totally voluntary, and your signed consent is required to complete this questionnaire. Respondents are please requested to respond to every question with utmost sincerity. All information provided shall be used for research purpose only and will be treated confidentially. Thank you.

Section 1: Sociodemographic and Clinical Characteristics

Please fill or tick the questions below as appropriate.

1. Age (in years)…….
2. Sex: Male ☐ Female ☐
3. Marital status: Single ☐ Married ☐ Divorced ☐
4. What is the name of the community you reside in?……..
5. Which is your dominant hand? Right ☐ Left ☐
6. Type of stroke experienced by respondent? Ischemic ☐ Hemorrhagic ☐
7. How many stroke events have you had? First ☐ Recurrent ☐
   If recurrent how many?……
8. Which side of your body did the stroke event(s) you experienced affect?
   Right ☐ Left ☐
9. When did you first experience this stroke event? (In months)…….……

Section 2: The Reintegration to Normal Living Index

The following statements solicit information on your participation in everyday activities within the community. Tick the box that best describes your situation for each question.

S.No	RNLI	D	P	MS	F
10	I move around my living quarters as I feel necessary (wheel chairs, other equipment or resources may be used)				
11	I move around my community as I feel necessary (wheel chairs, other equipment or resources may be used)				
12	I am able to take trips out of town as I feel are necessary (wheel chairs, other equipment or resources may be used)				
13	I am comfortable with how my self-care needs (dressing feeding toileting bathing) are met (adaptive equipment, supervision and/or assistance may be used)				
14	I spend most of my days occupied in work activity that is necessary or important to me (work activity could be paid employment, housework, volunteer work, school, etc.), (adaptive equipment, supervision and/or assistance may be used)				
15	I am able to participate in recreational activities (hobbies crafts sports reading television games computers, etc.) as I want to (adaptive equipment, supervision and/or assistance may be used)				
16	I participate in social activities with family friends and/or business acquaintances as is necessary or desirable to me (adaptive equipment, supervision and/or assistance may be used)				
17	I assume a role in my family which meets my needs and those of other family members (family means people with whom you live and/or relatives with whom you do not live but see on a regular basis)				
20	In general, I am comfortable with my personal relationships				
21	In general, I am comfortable with myself when I am in the company of others				
22	I feel that I can deal with life events as they happen				

D: Does not describe my situation, P: Partially describe my situation, MS: Mostly/sometimes describe my situation, F: Fully describes my situation, RNLI: Reintegration to normal living index

Section 3: The Life Satisfaction Questionnaire (LISAT-11)

How satisfactory are these different aspects of your life? Tick the answer that best describes your situation.

S.No.	LISAT questions	VD	D	RD	RS	S	VS
22	Life as a whole is						
24	My vocational situation is						
25	My financial situation is						
26	My leisure situation is						
27	My contact with friends and acquaintances are						
28	My sexual life is						
29	My ability to manage my self-care (dressing, hygiene, transfers, etcetera) is						
30	My family life is						
31	My partner relationship is						
32	My physical health is						
33	My psychological health is						

VD: Very dissatisfying, D: Dissatisfying, RD: Rather dissatisfying, RS: Rather satisfying, S: Satisfying, VS: Very satisfying