Social Support after Stroke: Influence of Source of Support on Stroke Survivors' Health-Related Quality of Life

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Authors' contributions

This work was collaboratively carried out by the authors. Author GOVO conceived and designed the study, carried out statistical analyses and drafted the manuscript. Author MMM collected and analyzed data and provided material support. Authors MUA, MAM and HNA drafted and reviewed the manuscript for intellectual content. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Introduction: Social support has often been identified as a key determinant of important stroke outcomes such as health-related quality of life (HRQoL). Information on the influence of the specific sources of social support on poststroke HRQoL is however scarce. This study examined the influence of social support received from family, friends and significant others on stroke survivors' HRQoL.
Methods: One hundred consenting stroke survivors were purposively recruited from two tertiary hospitals in Northern Nigeria into this cross-sectional study. Data on the stroke survivors' socio-demographic and stroke-related attributes were obtained. Perceived support from friends, family and significant others was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS) while HRQoL was assessed using the Stroke-Specific Quality of Life-12 (SS-QoL-12) measure. Hierarchical regression analysis was used to identify the independent influence of the

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different sources of social support on HRQoL.

Results: Mean age of the stroke survivors was 51.39±13.52 years. None of the specific sources of social support had significant independent influence on overall and domain-specific HRQoL. Rather, overall social support, which represents the aggregate of support from each social support source, namely friends, family and significant others, had significant and independent positive influence on psychosocial ($\beta = 0.74$, $P = 0.02$) and overall ($\beta = 0.56$, $P = 0.04$) HRQoL.

Conclusion: The outcome of this study suggests that social support from a combination of sources (overall social support), rather than support from any particular source, significantly and positively influenced the HRQoL of stroke survivors.

1. INTRODUCTION

Social support is an important component of successful disease management that plays a significant and often decisive role in treatment outcomes [1-3]. Stroke is the most common and disabling neurological disease in adults globally [4-5] and survivors of the disease often experience difficulties in daily activities which often result in dependence on support from others [6]. Furthermore, restrictions encountered by stroke survivors in role performance and other advanced aspects of human functioning often necessitate reliance on support from family and friends [6-8] Aside from physical functioning, the positive impact of social support on depression [9] and cognitive functioning [10] following stroke has also been documented. The sum total of the stroke aftermath is however better captured in the quality of life construct [11-12]. Consequently, the impact of social support on health-related quality of life (HRQoL) of stroke survivors is a topic that has generated some degree of interest in stroke care and research with findings indicative of positive and beneficial relationship between the two constructs [11,13].

Understanding the impact of social support on poststroke HRQoL may however require more insight into the influence of specific aspects of social support, such as type, frequency, quantity, quality and source of support. A recent systematic review of literature identified a dearth of information on the influence of specific sources of social support on the HRQoL of stroke survivors [13]. This gap in stroke literature however needs to be addressed especially as the source of social support is known to affect the value attached to the support by recipients and the consequent impact of the support [13-14]. For instance, studies among the elderly in Asian and Western countries have reported differences in the impact of sources of social support on different aspects of HRQoL [14-19],

and these findings are suggestive of the distinct roles played by different sources of social support in the well being of the elderly. Identifying the disparate impact of social support from different sources on the HRQoL of stroke survivors may therefore contribute to the body of knowledge on practical means of optimizing post-stroke HRQoL especially in cultures where provision of social support is predominantly robust and constitutes the norm.

Nigeria is the most populous country in Africa having a population with deeply rooted cultural outlook. Age long traditions of strong kinship ties, communal living and good neighborliness which naturally culminate in strong social support base still resonate on the African continent in spite of growing modernization [20]. These cultural attributes become even more observable during ill health with various support networks available to provide needed support [21]. Since social support is customary in this part of the world therefore, this study sought to identify the differential influence of social support from specific sources (namely friends, family and significant others) on HRQoL in a sample of Nigerian stroke survivors. We hypothesized that after controlling for socio-demographic and stroke-related attributes, the impact of social support on HRQoL of stroke survivors will significantly differ by source of the support. Based on a previous observation that family members of Nigerian stroke survivors are the major primary caregivers [21], we further hypothesized that family social support will exert the most significant positive influence on the stroke survivors' HRQoL.

2. MATERIALS AND METHODS

This hospital-based cross-sectional survey was approved by an institutional Research and Ethics Committee. The study participants were 100 stroke survivors receiving physiotherapy care at

2 tertiary care hospitals in North-eastern Nigeria. Consciousness, ability to comprehend English or Hausa language and willingness to participate in the study by the provision of informed consent constituted the eligibility criteria. Data on socio-demographic and stroke-related attributes were obtained from the stroke survivors using data forms. Age and post-stroke duration were recorded as raw values, while marital status and prestroke employment were dichotomized as 'married and not married' and 'employed and unemployed' respectively. Educational status (highest educational qualification) was categorized as none, Quranic, primary, secondary, and tertiary. Functional limitation was assessed based on the 5 disability levels of the Modified Rankin Scale (mRS) [22]. The Multidimensional Scale of Perceived Social Support (MSPSS) [23] and the Short version of the Stroke-Specific Quality of Life Scale (SSQoL-12) [25] were respectively utilized to assess the perceived social support and health-related quality of life of the participants. All data were collected by the second author (M.M.) from April to June 2012.

The Multidimensional Scale of Perceived Social Support (MSPSS) [23] is a 12-item self-administered scale consisting three subscales. The subscales distinguish source of social support namely 'family', 'friends' and 'significant others' and each sub-scale contains 4 items. Items are scored on a 7-point Likert-type scale ranging from "strongly disagree" to "very strongly agree''. The score for each sub-scale was obtained by finding the arithmetic mean of the sum of the scores of the subscale items. High score indicates high level of perceived social support. The items on the MSPSS have excellent internal consistency (Cronbach's alpha = 0.84-0.92) and strong test-retest reliability (r = 0.72 to 0.85) [24].

The Short version of the Stroke Specific Quality of Life scale (SS-QoL-12) [25] is the brief version of the original 42-item Stroke-Specific Quality of Life scale. Each of the SS-QoL-12 items represents each of the 12 domains of the original SS-QoL. Items on the SS-QoL-12 are distributed into 2 domains - namely physical and psychosocial domains, and are scored on a 5-point scale. The total and domain scores are obtained by finding the arithmetic mean of the sum of the item scores and higher scores depict better quality of life. The total score and physical and psychosocial sub-scores of the SS-QoL-12 were reported to possess high internal consistency with Cronbach's alpha ranging from 0.77 to 0.89 [25].

2.1 Statistical Analyses

Socio-demographic, stroke-related, social support and HRQoL data were presented as frequencies, percentages, means and standard deviations. The categorical variables were presented as frequencies and percentages while the continuous data were summarized using mean and standard deviation.

In order to detect the distinctive influence of social support on HRQoL, the possible effect of socio-demographic and stroke-related factors on HRQoL were examined using bivariate analyses. Bivariate analyses used included two-tailed Pearson's Moment Correlation for age and post-stroke duration; independent *t*-tests were conducted for differences in HRQoL by gender, marital status, and pre-stroke employment status while one-way ANOVA was used for variance in HRQoL based on educational status and functional limitation. For functional limitation, the 5 disability levels on the mRS were aggregated to 3 levels namely 'not significant/mild disability', 'moderate', and 'moderately severe'. Those socio-demographic and stroke-related variables that emerged significant in the bivariate analyses were controlled for using hierarchical regression models and the independent influence of the social support variables on HRQoL was examined. Also prior to the regression analyses, correlations between social support variables (overall, family, friends and significant others support) and HRQoL variables (overall, and physical and psychosocial domains) were assessed using two-tailed Pearson's Moment Correlation test, and only significantly correlated social support variables were included in the regression analyses.

Three hierarchical regression analyses were conducted for each of overall HRQoL, physical HRQoL domain and psychosocial HRQoL domain as the dependent variables. In step 1 of each of the hierarchical regression analysis, socio-demographic and stroke-related variables that emerged significant in the bivariate analyses were entered. In step 2, the variables of social support that were significantly correlated with the HRQoL variables in the Pearson's Moment Correlation test were entered and analyzed. Alpha was set *a priori* at 0.05.

3. RESULTS

3.1 Socio-demographic and Stroke-related Characteristics of Study Participants

The average time from stroke to participation in the study was 18.80±22.69 months. Age of stroke survivors ranged from 28 to 85 years with a mean of 51.39±13.52 years. Male (59%) and married (72%) stroke survivors were in the majority. The socio-demographic and stroke-related attributes of the participants are presented in Table 1.

Table 1. Socio-demographic and stroke-related characteristics of participants (n = 100)

Variable	Frequency	%
Age (years)		
Mean (SD)	51.4 (13.5)	
Range	28-85	
Gender		
Male	59	59
Female	41	41
Living arrangement		
Alone	7	7
With family/friends	93	93
Marital status		
Married	72	72
Not married (Divorced/Widowed/Single)	28	28
Educational status		
None	5	5
Quranic	31	31
Primary	13	13
Secondary	21	21
Tertiary	30	30
Employment status		
Employed	70	70
Unemployed	30	30
Post-stroke duration		
Mean (SD)	18.8 (22.6)	
Range	1-108	
Functional limitation (mRS)		
Not significant/mild	36	36
Moderate	43	43
Moderately severe	21	21

mRS – modified Rankin scale

3.2 Social Support Data

Mean overall social support score was 5.06 (SD 0.99), while mean scores for the family, friends and significant others sources of support were 6.56 (SD .94), 4.29 (SD 1.45) and 4.21 (SD 1.64) respectively as assessed using the MSPSS.

3.3 Bivariate Analyses

Age, sex, education, pre-stroke employment, post-stroke duration and level of functional limitation emerged as factors that were significantly related with HRQoL in the bivariate analyses.

Results of the bivariate analyses also showed that only social support provided by friends and significant others was significantly correlated with overall HRQoL, physical HRQoL domain and psychosocial HRQoL domain. Correlations between 'family' social support and overall and domain-specific HRQoL were weak and lacked statistical significance and was therefore not included in the regression statistics while the correlation between family social support and the physical domain of HRQoL not only lacked statistical significance and negligible but was also negative (r = -0.02; P = 0.85) (Table 2).

3.4 Hierarchical Regression Analyses

Hierarchical multiple regression analysis was used to identify the independent impact of overall social support, and 'friends' and 'significant others' social support on HRQoL after adjusting for the socio-demographic and stroke-related variables that emerged as significant variables in the bivariate analyses (Table 3).

3.5 Social SUPport and Overall HRQoL

Overall, 'friends' and 'significant others' social support accounted for a significant but marginal variance in overall HRQoL of the stroke survivors (R^2 change = 0.07, P = 0.02). However, only overall social support had independent and significant relationship with overall HRQoL (β = 0.56, P = 0.04) (Table 3).

3.6 Social Support and the Physical Domain of HRQoL

As shown in Table 3, neither overall social support nor the 'friends' and 'significant others' social support had significant influence on physical HRQoL (R^2 change = 0.04, P = 0.09). Rather, only the control variables entered in step 1 of the regression model namely educational status and functional limitation had significant relationships with the physical domain of the HRQoL of the stroke survivors.

Table 2. Bivariate analyses for relationships among socio-demographic, clinical and social support variables, and health-related quality of life after stroke

Variables	Health-related quality of life		
	Overall	Physical *Statistic (*P* value)*	Psychosocial
Age (years)	-0.28 (0.004)	-0.29 (0.004)	-0.21 (0.03)
Post-stroke duration (months)	0.23 (0.02)	0.31 (0.002)	0.08 (0.44)
Gender	2.39 (0.02)	1.48 (0.14)	3.08 (0.003)
Marital status	1.18 (0.24)	0.53 (0.60)	1.80 (0.08)
Pre-stroke employment status	3.50 (0.001)	3.19 (0.002)	3.08 (0.003)
Educational status	7.62 (0.000	5.25 (0.001)	7.74 (0.000))
Functional limitation (mRS)	20.71 (0.000)	31.30 (0.000)	5.79 (0.004)
Social Support			
Overall	0.32 (0.001)	0.23 (0.02)	0.36 (0.000)
'Family'	0.08 (0.46)	-0.02 (0.85)	0.18 (0.07)
'Friends'	0.30 (0.003)	0.22 (0.03)	0.34 (0.000)
'Significant others'	0.29 (0.004)	0.26 (0.01)	0.26 (0.01)

*Statistic: Pearson's moment correlation for age, post-stroke duration and social support variables; Independent t-test for gender, marital status and pre-stroke employment status; One-way ANOVA for educational status and functional limitation. Level of statistical significance for all analyses was α < 0.05
mRS – modified Rankin Scale

3.7 Social Support and Psychosocial Domain of HRQoL

Social support sources ('friends' and 'significant others') and overall social support was entered into the second step of the hierarchical regression analysis and significantly accounted for about 10% variance in psychosocial HRQoL of the stroke survivors (R^2 change = 0.10, *P* = 0.01). Only overall social support was however significantly associated with the psychosocial domain of HRQoL (β = 0.74, *P* = 0.02) (Table 3).

4. DISCUSSION

The adverse effect of stroke on virtually all aspects of human functioning often results in the dependence of stroke survivors on others for support with consequent impact on outcome of the disease. This study examined the influence of sources of social support on HRQoL of stroke survivors.

Moderate but significant correlation was observed between each of overall social support, social support from friends and social support from significant others, and overall, physical and psychosocial HRQoL of the stroke survivors while 'family' social support had no significant association with domain-specific and overall HRQoL. Between the two sources of social support that significantly correlated with HRQoL, support from friends was more highly correlated with overall and physical domain and psychosocial domain of HRQoL. Worthy of note

is the comparatively higher correlation between 'friends' social support and the psychosocial domain of HRQoL as represented by the higher correlation coefficient. Existing evidence shows that support from friends for the most part, has profound psychosocial benefits [15-16]. Characteristically, friendship entails a lot of psychological, emotional and social interactions and would therefore likely affect these aspects of life even after a disease condition [15].

The lack of significant relationship between family social support and HRQoL observed in this study is somewhat paradoxical as the stroke survivors reported the highest level of social support from their families based on the mean MSPSS family subscale score. Equally unexpected was the negative and almost negligible correlation between 'family' social support and the physical domain of HRQoL especially as family support is expected to substantially involve providing assistance with physical activities and to consequently contribute to the physical wellbeing of the support recipient [8,15-16]. Although the disabling nature of stroke will tend to make survivors depend on family members for assistance and support with physical activities [15], there are reports that indicate that provision of such support, also known as instrumental support [26], could be counterproductive [7,27-28]. One study of individuals with chronic diseases also showed that compared to friends, support from family members exert more negative influences on aspects of disease management such as physical activity, and psychosocial coping [29].

Table 3. Hierarchical regression analyses for relationship between social support sources, and Health-Related Quality of Life in stroke survivors (N = 100)

Variables	$R^2\Delta$	Unstandar-dized beta (β)	*P*
Overall HRQoL			
Step 1	**0.37**		**0.00***
Age		-0.12	0.23
Gender		-0.06	0.62
Pre-stroke employment		-0.21	0.07
Educational status		-0.22	0.03*
Post-stroke duration		0.09	0.31
Functional limitation		-0.36	0.00*
Step 2	**0.07**		**0.02***
'Significant others'		-0.13	**0.48**
'Friends'		-0.25	0.18
'Overall'		0.56	0.04*
Physical HRQoL			
Step 1	**0.41**		**0.00***
Age		-0.12	0.81
Pre-stroke employment		-0.22	0.01*
Educational status		-0.19	0.05
Post-stroke duration		-0.16	0.06
Functional limitation		-0.41	0.00*
Step 2	**0.04**		**0.09**
'Significant others'		-0.04	0.83
'Friends'		-0.22	0.22
'Overall'		0.32	0.23
Psychosocial HRQoL			**0.00***
Step 1	**-0.23**		
Age		-0.10	0.40
Gender		-0.20	0.11
Pre-stroke employment		-0.10	0.43
Educational status		-0.22	0.05
Post-stroke duration		-0.02	0.84
Functional limitation		-0.22	0.02*
Step 2	**0.10**		**0.01***
'Significant others'		-0.31	0.12
'Friends'		-0.23	0.25
'Overall'		0.74	0.02*

*Level of statistical significance equals α < 0.05

According to the threat-to-self-esteem model, recipients of help may perceive such help as a threat that projects them as inferior and lacking in ability [30]. In one qualitative study, stroke survivors expressed frustration and anger when family members provided support in ways that emphasized their physical dependence [6]. The foregoing therefore emphasizes the need to educate family members of stroke survivors on ways of providing support without eroding the self-esteem and autonomy of their support recipients especially as some may lack the understanding of stroke survivors' support requirements [31].

A major finding of this study which also negates our hypothesis is the lack of independent influence of any of the three sources of social support on HRQoL. Conversely, overall social support significantly influenced HRQoL; both overall HRQoL and psychosocial domain of HRQoL. This scenario suggests that social support from the combination of sources was more important at determining HRQoL of stroke survivors than social support from any one source. In line with this finding, a recent review of literature revealed that HRQoL of stroke survivors was more significantly influenced by social support generally than by any specific source or type of social support [14]. Similarly, less depressive symptoms [32] and better health outcomes [33] have been observed with diverse social support network compared to support from a specific source. Social support without source specificity was also identified as an important predictor of overall and domain-specific HRQoL in a sample of individuals who had suffered a stroke for between 1 and 3 years [34]. In the study by Glass et al [7], the sum total of social support irrespective of source was found to result in better functional outcomes after stroke. Similarly, Felton and Berry [15] reported that the availability of duplicate providers of support was helpful in offsetting negative impact of support from any one source. That social support influenced psychosocial HRQoL and not physical HRQoL as observed in this study may however be attributable to the fact that social support is a component of psychosocial well-being.

It is worthy of note that some of the existing stroke studies that revealed positive associations between social support and stroke outcomes also focused on the effect of specific types of social support. Tsouna-Hadjis et al. [8] in their study found instrumental and emotional support from family to significantly influence outcome while other types of support from family had no such significant impact. With the general acceptance that 'family' social support involves more of physical or instrumental support while friends tend to provide mostly emotional support, our observation of a disparate influence of the

two sources of support (or the lack of it as in the case of family social support) on HRQoL in this study may have resulted from the differences in the types of support provided by each source. We however did not examine specific types of social support. Future studies may therefore need to explore the influence of the various types of social support on HRQoL of Nigerian stroke survivors in order to assist stroke survivors' support networks provide the type of support with the greatest benefit. Longitudinal studies will also be required to investigate the effect of time after stroke on the relationship between social support and HRQoL, and to rule out reverse causality in the relationship between social support and HRQoL, which is a common scenario in cross-sectional studies. It is also important to note that the statistically significant associations between some socio-demographic and clinical attributes namely pre-stroke employment, educational status and functional limitation, and HRQoL (Table 3) imply that these attributes may have mediated the influence of social support on HRQoL.

Other limitations of this study include the assessment of social support based on the stroke survivors' perception which may differ from actual receipt or availability of support although it is believed that the perception of the recipient of social support is what matters most. Selection bias due to the hospital-based design of this study may also limit the generalizability of findings.

5. CONCLUSION

Availability and receipt of social support are important contributors to the well-being of man. Following the assessment of the influence of social support from family, friends and significant others on HRQoL of stroke survivors, it was observed that the source of social support had no independent influence on overall, as well as physical and psychosocial HRQoL. Overall social support, without recourse to the source, was however significantly associated with overall and psychosocial HRQoL. Hence, social support from a combination of sources may be more important in enhancing HRQoL of stroke survivors than social support from any one source. Rehabilitation and other health professionals involved in stroke care should therefore encourage, emphasize and target support from the entire support network of the stroke survivor to achieve optimal quality of life outcomes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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