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Multicenter Assessment of Health-Related Quality of Life (HRQOL) Among Stroke Survivors

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Abstract

Background: Stoke is a long-term condition. Estimation of stroke outcomes is lacking. Stroke is known as the most common cause of disability among adults. The measurement of Health-Related Quality of Life (HRQOL) is important to understand the actual status of the patients.

Aim: The aim of this study was to assess HRQOL among stroke patients and analyze clinical and functional factors that influence it.

Material and method: A cross-sectional study was applied to 65 strokes outpatients, 33 from Assiut University hospital, Assiut, Egypt and 32 from, King Abdulaziz University, Jeddah, Saudi Arabia. A questionnaire was used to complete related data and assessment of HRQOL was done by the use of Barthel index, SF36, and SSQOL by personal interview.

Result: No significant differences were detected between two studied groups in all characteristics. For all study sample, our patients had low mean scores in all SF36 domains, the lowest was for RE with 3.46 ± 9.1 and GH was the best mean (51.7 ± 12.99). As regards SSQOL, patients had low mean scores on the lowest subscale in productivity (6.72 ± 3.21), whereas the language was the least affected (15.86 ± 6.26). There was a significant difference between the means of PCS and SSQOL in post-stroke duration which was significantly higher in >24 months (37.21 ± 8.59 and p = 0.007and 141.57 ± 36.12 and p = 0.052 respectively) than in the shorter durations. The independent patients had significantly higher PCS and SSQOL mean scores than who need assistance and immobile ones (26.79 ± 5.09 and p< 0.0001 and 101.93 ± 22.16 and p< 0.0001 respectively). Age and mobility were significantly negative correlated with PCS, SSQOL, and Barthel scores while there was a significant positive correlation between ULVC and LLVC testing grades and PCS, MCS, SSQOL and Barthel index scores. In the linear regression model, duration, mobility and voluntary control of lower limbs were predictors for PCS of SF-36 (p = 0.045, 0.000 and 0.036 respectively). There were no significant predictors on MCS. On the other hand Mobility and voluntary control of lower limbs were significant predictors for SSQOL (p = 0.001 and 0.051 respectively).

Conclusion: Stroke patient had poor QOL. A need for post-stroke care programs for improving the physical, mental and social quality of life for those patients is mandatory.

Keywords: Stroke; HRQOL; SF36; SSQOL

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Introduction

The World Health Organization's Global Burden of Disease analyzes depending on disability and mortality data worldwide. These data highlighted stroke as the fourth leading cause of disability-adjusted life years (DALYs) [1]. About 15 million people suffer strokes worldwide. Of these, 5 million died and 5 million survive with disabilities, becoming a burden for their families and communities [2].

Stroke is known as the most common cause of disability among adults [3]. Stroke survivors usually suffer from a functional disability, which negatively affects the quality of life [4].

Health-related quality of life (HRQOL) refers to functioning and well-being in physical, mental and social aspects of life [5] influenced by disease, injury, treatment and policy [6] while QOL refers to aspects of life beyond health; it may affect personal relationships, financial resources, and work recreation [7].

Nowadays, more persons suffer from stroke and more survive the acute phase [8]. This, in turn, results in an increase in the number of stroke patients returning to the community and increase in the number of persons who will seek community-based services to prevent deterioration and also to increase their functional capacities to facilitate their community reintegration, and to promote HRQOL [7].

Rehabilitation improves the functional status with increasing Quality of life (QOL) for stroke survivors. Therefore, the assessment of stroke rehabilitation should include disability and QOL domains, which are influenced by the disease [9-12].

Usually, stroke studies use generic scales to assess the QOL in stroke patients. These scales have the advantage comparing different diseases, but these scales are less sensitive to explore the effects of impairments in QOL in stroke patients. This is the reason that it is recommended to use both generic and stroke specific scales [13].

The aim of this study was to assess HRQOL among stroke survivors in Assiut, Egypt and in Jeddah, Saudi Arabia and to analyze the socio-demographic, clinical and functional factors that influenced the different domains of HRQOL by using Barthel index (BI), stroke specific quality of life (SSQOL)scale and SF36 scale among these patients.

Materials and Methods

This cross-sectional study included 65 stroke survivors attending for rehabilitation as outpatients 33 of them from the department of Rheumatology and Rehabilitation, Assiut University hospital, Egypt and 32 of them from the department of Physical Medicine and Rehabilitation, King Abdulaziz University, Saudi Arabia.

The recruitment period was from June 2014 until December 2014. We included patients of both genders, older than 18 years, diagnosed with a stroke which was confirmed by a neurologist and computed tomography (CT) or magnetic resonance imaging (MRI). All patients had the same rehabilitation programs for the same period in both Egypt and Saudi Arabia.

Patients with recurrent stroke, transient ischemic attacks, marked cognitive and language impairments or associated with other neurological or orthopedic conditions that affect the functional capacity were excluded from the study of both groups.

Data were collected by using a questionnaire including age, sex, duration of a stroke, nature of the stroke; dominant hand, weak side, comorbidity, and mobility were collected. The questionnaire was filled by personal interview.

Barthel index (BI) was used to evaluate the disability of stroke patients [14,15]. The validity and reliability of Barthel index had been proven among different countries; it basically evaluated mobility and the ability to take care of himself. The BI is composed of 10 items including feeding, transferring from chair to bed, grooming, toilet use, bathing, mobility, climbing up and down stairs, dressing, bowel control and urine control. Each article was scored separately and the total points were calculated. The total points vary between 0 and 100 [16].

Stroke specific quality of life (SSQOL) is a self- reported questionnaire which consisted of 49 questions grouped into 12 domains [17]; each domain consisted of 3 to 10 items with a minimum value of 1 (meaning the worst outcome) and a maximum value of 5 (meaning the best outcome) [18]. The reliability, validity, and responsiveness of the SS-QOL had been investigated extensively. Reports on responsiveness ranged from non-responsiveness to moderate responsiveness [19].

The SF-36 consisted of 36 items grouped into 8groups which were Physical

Functioning (PF) (10 items), Role Physical (RP) (4 items), Bodily Pain (BP) (2 items), General Health (GH) (5 items), Vitality (VT) (4 items), Social Functioning (SF) (2 items), Role Emotional (RE) (3 items), and Mental Health (MH) (5 items). The scores from the 8 scales ranged from 0 (worst health) to 100 (best health). After the 8 scores were calculated, 2 summary scales resulted, the Physical Component Summary (PCS) and the Mental Component Summary (MCS), with a mean value of 50 and a standard deviation (SD) of 10 [2,4].

Patients were assessed at various times after stroke, and thus, were at different stages of their natural recovery.

Data entry was done by using Excel program, and analysis was done by the SPSS program version 16.0. Descriptive statistics and recording of data were done. All scores of BI, SSQOL, and SF-36 components as range and Mean + SD. For analysis of these non-parametric data, Chi-square test (X2) and Fisher exact test to compare between qualitative variables. Mann- Whitney test was used to compare two means and Kruskal-Wallis test was used to compare more than two means. Spearman correlation test was used for bivariate analysis. For multiple analysis, Linear regression analysis was done between PCS scores, MCS scores and SSQOL scores as dependent variables in three different models and the significant predictors from the univariate and bivariate analysis for each of them. P-value was considered significant when it was 0.05 or less.

This study was approved by committee of ethics of Faculty of

Medicine, Assiut University, Egypt and Faculty of Medicine, King Abdulaziz University, Saudi Arabia. Informed consent was obtained from all patients.

Results

Total sample of our study was 65 stroke patients, 33pateints from Rheumatology, Rehabilitation and Physical Medicine Department in Assiut University Hospitals (Assiut, Egypt) and 32 patients from Physical Medicine and Rehabilitation Unit of King Abdulaziz University Hospital (Jeddah, Saudi Arabia) between June 2014 and December 2014.

No significant differences were detected between two studied groups in all characteristics.

For all study samples as presented in **Table 1**, the range of age was 20-95 years with mean ± SD 58.26 ± 14.23. 70.8 % of them were males and 29.2% were females. 81.5% of them were due to the ischemic cause. The duration since attack ranged 1-84 months. Comorbidity history was present in 70.8%, 33.8% were independent while 44.6% move with assistance. In upper limb voluntary control (ULVC) testing, 18.5% in grade 5 and 6 and 24.6% in grade 6 in lower limb voluntary control (LLVC) testing. For all sample, the means ± SD of the two components of SF36 components was 32.14 ± 7.6 and 36.18 ± 10.1 for PCS and MCS while it's 126.89 ± 31.7 for SSQOL.

Our patients had low mean scores in all SF36 domains, the lowest was for RE with 3.46 ± 9.1 and GH was the best mean (51.7 ± 12.99). As regards SSQOL, patients had low mean scores on the lowest subscale in productivity (6.72 ± 3.21), whereas the language was the least affected (15.86 ± 6.26) as shown in **Table 2**.

Table 3 showed the comparison between means of PCS, MCS, and SSQOL in every independent variable, there was a significant difference between the means of PCS and SSQOL in post-stroke duration which was significantly higher in >24 months (37.21 ± 8.59 and p = 0.007 and 141.57 ± 36.12 and p = 0.052 respectively) than in the shorter durations. The independent patients had significantly higher PCS and SSQOL mean scores than who need

Table 1 Comparison of descriptive and clinical characteristics of studied stroke patients in Rheumatology, Rehabilitation and Physical Medicine Department, Assiut, Egypt, and Physical Medicine and Rehabilitation Unit, Jeddah, Saudi Arabia.

Characteristics	Assiut	Saudi Arabia	Total	Significance
	No (33)	No (32)	No (65)	
Age**				
Range	20- 82	42 – 95	20-95	
Mean ± SD	55.79+15.79	60.81 + 12.14	58.26 + 14.23	0.38
Sex*				
Male	21 (45.7)	25 (54.3)	46 (70.8)	0.17
Female	12 (63.2)	7 (36.8)	19 (29.2)	
Nature of stroke*				
Ischemic	24(45.3)	29 (54.7)	53 (81.5)	0.06
Hemorrhagic	9 (75.0)	3 (25.0)	12 (18.5)	
Dominant hand*				
Right	33 (51.6)	31 (48.4)	64 (98.5)	0.49
Left	0 (0.0)	1 (100.0)	1 (1.5)	
Duration**				
Range	3 – 54	1 – 84	Jan-84	1
Mean ±SD	10.67 + 13.42	18.12 + 26.34	14.34 + 20.98	
Weak side*				
Right	13 (43.3)	17 (56.7)	30 (46.2)	0.19
Left	20 (57.1)	15 (42.9)	35 (53.8)	
Comorbidity*				
Present	20 (43.5)	26 (56.5)	46 (70.8)	0.06
Absent	13 (68.4)	6 (31.6)	19 (29.2)	
Mobility*				
Dependent	13 (59.1)	9 (40.9)	22 (33.8)	0.72
Assisted	10 (34.5)	19 (65.5)	29 (44.6)	
Immobile	10 (71.4)	4 (28.6)	14 (21.5)	
Upper Limb Voluntary Control Testing*				
Grade 0	7 (87.5)	1 (12.5)	8 (12.3)	
Grade 1	2 (28.6)	5 (71.4)	7 (10.8)	
Grade 2	8 (61.5)	5 (38.5)	13 (20.0)	0.002
Grade 3	9 (81.8)	2 (18.2)	11 (16.9)	
Grade 4	7 (50.0)	7 (50.0)	14 (21.5)	
Grade 5	0 (0.0)	8 (100.0)	8 (12.3)	

Grade 6	0 (0.0)	4 (100.0)	4 (6.2)	
Lower Limb Voluntary Control Testing*				
Grade 0	1 (50.0)	1 (50.0)	2 (3.1)	
Grade 1	1 (25.0)	3 (75.0)	4 (6.2)	
Grade 2	5 (71.4)	2 (28.6)	7 (10.8)	0.11
Grade 3	8 (57.1)	6 (42.9)	14 (21.5)	
Grade 4	16 (72.7)	6 (27.3)	22 (33.8)	
Grade 5	2 (18.2)	9 (81.8)	11 (16.9)	
Grade 6	0 (0.0)	5 (100.0)	5 (7.7)	
Barthel**				
Range	5 – 95	15 – 100	5-100	0.43
Mean ± SD	52.73 ± 28.73	59.35 ± 21.82	55.94 ± 25.63	
PCS**				
Range	23 – 53	19 – 47	19-53	0.18
Mean ± SD	33.33 ± 6.84	30.91 ± 8.13	32.14 ± 7.55	
MCS**				
Range	26 – 47	18 – 65	18-65	0.23
Mean ± SD	34.36 ± 5.78	38.06 ± 12.99	36.18 ± 10.09	
SS QOL Total**				
Range	65-187	95 – 205	65-205	0.61
Mean ± SD	124.76 ± 33.47	129.16 ± 29.98	126.89 + ± 31.65	

*Chi-square test (X2) was used
**Kruskal-Wallis test was used to compare more than two means
PCS: Physical Component Summary
MCS: Mental Component Summary
SSQOL: Stroke Specific Quality of Life

Table 2 Mean scores on the SF36 domains and the stroke-specific quality-of-life (SSQOL) subscales of stroke patients.

SF 36 domains (N = 64)	Range	Mean ± SD	SSQOL subscales (N = 65)	Range	Mean ± SD
PF	0 - 90	24.85 ± 26.16	Energy	3 – 14	7.00 ± 2.36
RP	0 - 75	4.31 ± 14.17	Family role	13-Mar	6.75 ± 2.12
BP	0- 84	40.29 ± 23.91	Language	5 – 25	15.86 ± 6.26
GH	Oct-85	51.71 ± 12.99	Mobility	5 – 29	13.78 ± 6.30
VT	0- 90	39.85 ± 19.55	Mood	5 – 24	12.80 ± 4.53
SF	0 – 87	38.34 ± 24.68	Personality	15-Mar	7.30 ± 3.19
RE	0 – 33	3.46 ± 9.07	Self-care	5 – 99	13.98 ± 12.27
MH	Dec-96	50.77 ± 18.36	Social role	5 – 25	11.36 ± 4.27
PCS	19 - 53	32.14 ± 7.55	Thinking	15-Mar	10.16 ± 3.10
MCS	18 - 65	36.18 ± 10.09	UL function	24-May	11.75 ± 5.45
			Vision	15-Mar	10.95 ± 3.16
			Productivity	15-Mar	6.72 ± 3.21
			Total SSQOL	65 - 205	126.89 ± 31.65

SSQOL: Stroke Specific Quality Of Life; PF: Physical Functioning; RP: Role -Physical; BP: Bodily Pain; GH: General Health; VT: Vitality; SF: Social Functioning; RE: Role-Emotional; MH: Mental Health; PCS: Physical Component Summary; MCS: Mental Component Summary; UL: Upper-Limb.

assistance and immobile ones (26.79 ± 5.09 and p<0.0001 and 101.93 ± 22.16and p< 0.0001 respectively). In ULVC testing, the mean SSQOL was significantly higher in grade 6 than in the lower grades (162.0 ± 32.8 and p = 0.021) while in LLVC testing, mean MCS and SSQOL were significantly higher in grade 6 than in the lower ones (45.40 ± 13.78 and p = 0.052 and 152.20 ± 37.12 and p = 0.004 respectively). While no significant differences were shown in other parameters.

As shown in **Table 4**, age and mobility were significantly negative correlated with PCS, SSQOL, and Barthel scores while there was a significant positive correlation between ULVC and LLVC testing grades and PCS, MCS, SSQOL and Barthel index scores.

As shown in the **Table 5**, age, duration of the stroke, mobility and testing grades of ULVC and LLVC were the used independent factors PCS, MCS and SSQOL scores in linear regression model.

Duration, mobility and voluntary control of lower limbs were predictors for PCS of SF-36 (p = 0.045, 0.000 and 0.036 respectively). There were no significant predictors for MCS. On the other hand,

mobility and voluntary control of lower limbs were significant predictors for SSQOL (p = 0.001 and 0.051 respectively).

Discussion

The improvement in medical interventions increased the survival rate of patients suffering from strokes. This increased the interest in HRQOL as a tool to assess patient's disability throughout the disease duration [20].

Patients are usually affected socially, emotionally, physically, and occupationally. The measurement of HRQOL is important to understand the actual status of the patient [21].

In developing countries social and psychological problems had important effects on the stroke survivors, stroke and its consequences such as unemployment, and life expenses may lead to losing a majority of one's social advantages [22].

Table 3 Relation of the means between SF 36 components, the stroke-specific quality-of-life total score (SSQOL), and demographic and clinical parameters in stroke patients.

Parameters	NO	PCS	MCS	SSQOL
Sex				
Male	46	32.89 ± 7.90	35.37 ± 10.76	124.61 ± 28.78
Female	19	30.32 ± 6.43	38.16 ± 8.20	132.72 ± 38.34
		0.28	0.13	0.59
Nature of stroke				
Ischemic	53	31.70 ± 7.45	36.32 ± 10.20	126.53 ± 31.19
Hemorrhagic	12	34.08 ± 8.01	35.58 ± 10.01	128.64 ± 35.33
		0.28	0.66	0.98
Dominant hand				
Right	64	32.19 ± 7.59	36.17 ± 10.17	126.30 ± 31.55
Left	1	29	37	164
Duration**				
Range Mean ± SD	1 – 84	14.34 ± 20.98		
< 6 months	37	29.81 ± 6.91	36.16 ± 9.97	117.64 ± 27.64
> 6 to <24 months	14	33.21 ± 5.45	36.14 ± 9.73	136.00 ± 30.57
>24 months	14	37.21 ± 8.59	36.29 ± 11.48	141.57 ± 36.12
		0.01	0.98	0.05
Weak side:				
Right	30	33.17 ± 7.53	37.40 ± 11.74	123.72 ± 29.39
Left	35	31.26 ± 7.56	35.14 ± 8.47	129.51 ± 33.61
		0.32	0.36	0.53
Comorbidity				
Present	46	31.39 ± 7.67	35.04 ± 9.61	125.35 ± 30.618
Absent	19	33.95 ± 7.11	38.95 ± 10.96	128.95 ± 34.763
		0.27	0.35	0.77
Mobility**				
Dependent	22	36.95 ± 6.39	38.41 ± 11.88	153.18 ± 28.59
Assisted	29	31.07 ± 7.33	35.24 ± 9.19	118.71 ± 22.58
Immobile	14	26.79 ± 5.09	34.64 ± 8.86	101.93 ± 22.16
		0	0.46	0
Upper Limb Voluntary Control Testing**				
Grade 0	8	27.75 ± 4.87	33.12 ± 5.14	103.75 ± 33.26
Grade 1	7	27.14 ± 5.73	35.29 ± 11.53	113.14 ± 13.80
Grade 2	13	31.46 ± 6.19	34.62 ± 7.78	120.08 ± 28.46
Grade 3	11	36.55 ± 5.54	32.55 ± 6.33	131.82 ± 31.43
Grade 4	14	33.86 ± 9.99	35.79 ± 10.17	140.50 ± 25.17
Grade 5	8	33.00 ± 8.37	40.50 ± 11.87	124.71 ± 39.03
Grade 6	4	32.00 ± 6.68	51.75 ± 15.28	162.00 ± 32.75
		0.09	0.19	0.02
Lower Limb Voluntary Control Testing**				
Grade 0	2	32.00 ± 4.24	34.00 ± 9.89	97.50 ± 20.51
Grade 1	4	26.25 ± 6.95	43.75 ± 11.87	122.75 ± 26.97
Grade 2	7	28.86 ± 8.45	29.86 ± 4.74	104.14 ± 17.96
Grade 3	14	30.50 ± 6.77	32.21 ± 6.74	108.07 ± 24.44
Grade 4	22	35.09 ± 7.34	34.77 ± 6.38	133.59 ± 27.45
Grade 5	11	31.27 ± 8.71	41.55 ± 14.62	149.30 ± 33.14
Grade 6	5	35.00 ± 4.36	45.40 ± 13.78	152.20 ± 37.12
		0.14	0.052	0.004
*Mann-Whitney test was used to compare two means				
**Kruskal-Wallis test was used to compare more than two means				

Parameters	r (p)*			
	PCS	MCS	SSQOL	Barthel
Age	-0.249 (0.04)	-0.021 (0.87)	-0.279 (0.02)	-0.299 (0.01)
Duration	0.385 0.002)	0.035 (0.78)	0.291 (0.02)	0.392 (0.001)
Mobility	-0.523 (0.000)	-0.155 (0.217)	-0.638 (0.000)	-0.835 (0.000)
ULVC	0.262 (0.03)	0.271 (0.03)	0.385 (0.002)	0.543 (0.000)
LLVC	0.252 (0.04)	0.278 (0.02)	0.497 (0.000)	0.763 (0.000)
*Spearman correlation test was used SSQOL: Stroke Specific Quality Of Life PCS: Physical Component Summary MCS: Mental Component Summary ULVC: Upper Limb Voluntary Control LLVC: Lower Limb Voluntary Control				

Table 4 Correlation between the SF 36 domains, the stroke-specific quality-of-life total score (SSQOL), Barthel index, and some of the demographic and clinical features of stroke patients.

Long-term stroke studies reported that depression, disability [23-25], age [23], cognitive impairment [26], aphasia [24] and poor social network [25] were associated with poor HRQOL. On the other hand, patients with active social life appeared to have better HRQOL in all parameters [26,27].

The aim of our study was to compare between the group of patients in Assiut, Egypt and the group in Jeddah, Saudi Arabia but as there was no significant difference between the two groups in all characteristics, therefore we considered our patients as one group.

In the present study, age was negatively correlated with Barthel, PCS, and SSQOL but not with MCS. In a study done by Patel et al., it was reported that age is inversely associated with mental health at 1 year after stroke and with physical health at 3 years after a stroke. They found that younger patients expressed worse mental and physical health this may be due to that younger

patients were less able to cope psychosocially with the stroke than older patients or younger patients may have higher hopes of health than older patients [28]. These older patients were more likely to have had a previous illness, which might have required coping strategies. Also, they anticipate health problems and most of them suffered from co-morbidity which also had an impact on stroke [29].

On the other hand, two studies found that age was not a significant factor [30,31]. Also, Gunaydin et al. found that there was no significant difference between geriatric and non-geriatric patient groups by using SSQOL [32].

In the present study, 70.8% of patients were males, 29.2% were females this male predominance was reported by Doúan A, et al. in which males were 63% while females were 37% [33]. In our study, there was no significant difference between males and females and PCS, MCS, and SSQOL which was agreed by several studies [34-36]. But other studies showed that male's functionality was better than females [37-39]. This lower well-being in women may be due to a socio-cultural effect of women who were responsible for household management [40].

In the present study, we found that stroke patients with comorbidity and affected side had no significant effect on PCS, MCS, and SSQOL. This was agreed by other authors [41,42]. In another study by Patel et al. Poor physical health 1 year after stroke was independently associated with female, having diabetes mellitus and right hemispheric lesions [40]. This controversy had no explanation but health care facilities and culture of the population could be the explanation.

Table 5 Linear regression analysis of SF36 quality-of-life predictors and stroke-specific quality-of-life (SSQOL) predictors among stroke patients (n = 65).

PCS predictors	Beta (B)	P value (p)	95% Confidence Interval for B	
			Lower Bound	Upper Bound
Age	-0.029	0.653	-0.156	0.098
Duration	0.256	0.045	-0.024	0.537
Mobility	-6.828	0	-10.275-	-3.381-
ULVC	0.68	0.316	-0.665-	2.026
LLVC	2.153	0.036	4.165	0.941
MCS predictors				
Age	-0.008	0.938	-0.204	0.189
Duration	0.01	0.878	-0.115	0.134
Mobility	1.043	0.697	-4.291	6.377
ULVC	1.764	0.095	-0.318	3.846
LLVC	0.501	0.749	-2.613-	3.615
SSQOL predictors				
Age	-.133-	0.6	-0.639-	0.372
Duration	0.088	0.587	-0.234	0.409
Mobility	-24.796-	0.001	-38.517	-11.076
ULVC	1.632	0.544	-3.723	6.986
LLVC	1.137	0.051	-2.148	6.873

MCS: Mental Component Summary
PCS: Physical Component Summary
SSQOL: Stroke-Specific Quality of Life
CI: Confidence Interval
LLVC: Lower-Limb Voluntary Control
ULVC: Upper-Limb Voluntary Control

The results of our study showed that 33.8% of patients were dependent, 44.6% were assisted and 21.5% were immobile. This was agreed with previous studies [22,43] who found that 27% were dependent, 43% need assistance and 30% were independent. In a study done in 2004, they found that 8% of patients had HRQOL assessed as equivalent to death or worse [44].

Our results showed a decrease in all SF36 domains, this was agreed by several authors [45-47] especially the physical functioning domain which evaluated independent activities of daily living. These included activities like carrying groceries, running and lifting heavy objects, which were activities that most stroke patients find difficult to perform.

We found that RE was the most affected while GH was the least affected. RE was also most affected by the physical role and physical function in a study done by Carod-Artol et al., [13]. April et al., [46] and Ronning and Stavem [47]. They had reported that all dimensions of the SF-36 were markedly reduced in stroke patients and the most affected were physical and emotional role limitations.

In this study, we found that PCS was significantly correlated with age, duration and highly significant with mobility. Other authors reported that there were factors that independently influence stroke survivors which were physical impairment [48,49], disability [49,50], age [48-52], and depression [48,50].

As regarding SSQOL in the present study, productivity was the most affected while the language was the least affected. The low productivity was also reported by other authors [16,17,33,52,53]. This may be due to low income so that patients did not have rehabilitation therapy either in hospital or in private clinic [54,55].

Our results showed that SSQOL was significant with age, duration and ULVC, highly significant with mobility and LLVC. The significance of SSQOL and mobility was found by using the Danish version of SSQOL and was higher than that found in the American version [52].

In the future, it is useful to plan carefully the stroke rehabilitation programs that improve functional independence, physical independence, and communication as a team work. It is also important to screen stroke patients for depression and treat affected patients early as depression has a big impact on QOL.

Conclusion

Stroke patient had a poor quality of life with low mean scores in all SF36 domains, role emotional was the most affected and general health was the least affected. For stroke specific quality of life, patients had low mean scores; the lowest was productivity, whereas the language was the best. A need for post-stroke rehabilitation programs with a multidisciplinary team for improving the physical, mental and social quality of life for those patients is mandatory to regain their independent life.

Conflicts of Interest

Authors agree to the publication and declare that there is no conflict of interest

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