Factors Affecting Quality of Life for Patients with Cerebrovascular Stroke

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Abstract

Background: Patients with cerebrovascular stroke experience long-lasting physical and social limitations and can lose their jobs, independence, social status and self respect. There are several factors affecting patient's quality of life **Aim:** Identify factors affecting quality of life for patients with Cerebrovascular stroke including Physical, Social, and Psychological and Spiritual dimension. **Methods:** This study was conducted at the Neurology and Physiotherapy Outpatient clinics at Ain Shams University Hospital. **Design:** A descriptive exploratory design used in carrying out the study. Sample: A purposive sample of 100 adult patients, with old Cerebrovascular stroke, After 3 months post Stroke and further more. As well the patients able to communicate with others. **Tools:** 1) Patient's interview questionnaire to assess factors affecting quality of life. 2) The quality of life scale (stroke impact scale) to assess patient's quality of life. **Results:** the present study revealed that more than three fifth of the sample (70%) had poor quality of life in physical domains and (50%) poor quality of life in social domains. Furthermore, there were significant relation between patient's quality of life and age, sex, educational level, residence and income, co-existing disease, type of stroke and duration of disease, patients' level of knowledge, While, there were highly significant relation between patient's quality of life and dependency in activity of daily living. **Conclusion** The results of this study concluded that the factors that significantly affect quality of life for patients with cerebrovascular stroke were (age, sex, educational level, level of patient's dependency, residence, patient's income) and presence of co-existing diseases, type of stroke, duration of stroke and level of knowledge. As well, there were statistically significant differences between the studied patients sample quality of life and the socio demographic variables especially level of patient's dependency as regard Cerebrovascular stroke. **Recommendations:** Designing Patient's educational program to improve their knowledge for cerebrovascular stroke.

Key words: quality of life, stroke survivors

Introduction:

Stroke constitutes a major medical and social problem and remains a leading cause of death in industrialized societies. Although the incidence of stroke and mortality varies among countries. Suffering a stroke produce many often dramatic and irreversible effects in the lives of patients and a stroke may have a remarkable varied effect on how health related quality of life (HRQOL) is perceived by the patients *(Klocek, 2013).*

Cerebrovascular accident is the sudden development of focal neurologic deficit resultant from one or more blood vessels of brain affected. Suffering from cerebrovascular accident affects survivors quality of life, personal, social, vocational, and physical which can result in social stigmatizing for the individual which might affect the individual in a negative way *(Gillen, 2015).*

Stroke can result in survival with the permanent impaiment in physical, psychological, and social functions. Dependence in activities of daily living, alteration of emotional and psychological status and deterioration in social communication can influence the QOL of patients with stroke. Most patients with stroke experience role changes due to impaired autonomy caused by difficulty with performing daily living activities, as well as problems with interpersonal relationships. They also face psychosocial maladjustment due to long-term stress and strain, which reduces their subjective evaluation ability of their QOL *(Kim et al., 2014).*

Stroke is a leading cause of death and frequently reduces the level of quality of life (QOL) of the survivors. Many factors have been shown to influence the QOL of these patients, which include functional impairments, dependency in activity of daily living (ADL), the presence of depression, cognitive impairment, speech disturbances and the location of the lesion. Home circumstances and standard of living and also gender and age, educational level, as well as more dependent stroke survivors, reporting lower quality of life *(Omu & Reynolds, 2012).*

Health related quality of life is concerned with the impact of health state on persons ability to lead a fulfilling life It incorporates the individual subjective evaluation of his or her physical, mental/ emotional, family and social functioning. Varying levels of restrictions in physical activity may contributes a problems for post stroke patients, CNS damage may lead to dysphasia; cognitive and intellectual disturbances; restricted consciousness, and emotional and self identity disturbances. Compared with restriction in physical activity, deficit in psychosocial functioning often appear to cause a greater problem in post stroke patients. Conversely, stroke causes significant decrease in QOL among those who don't have a post - stroke disability *(Pathanasiou, Coppens & Potagas, 2013).*

Nurses play an important role as regard health education and prevention of disease and measure to address long term complications. Often, many body systems are impaired as a result of stroke; the nurse should be well prepared to care for patients with stroke. As such nurse must be able to develop a care plan for post stroke patients recovery that considers both neurologic deficit and potential complication associated with that deficit As well improving stroke service nurses have a key role to play a part of multi-displinary team (MDT) involved with early diagnosis and treatment *(Adams & Birchenall, 2011).*

Significance of the study:

Stroke is a major health problem in developing countries. The prevalence rate of stroke in Egyptian governorates was significantly higher than other Arabic countries *(Khedr et al., 2014).* In Egypt, according to recent estimates, the overall prevalence rate of stroke is high with a crude prevalence rate of 963/100 000 inhabitants. Improvement of stroke care in Egypt should be achieved through multi and interdisciplinary approach including public awareness, physicians' education, and synergistic approach to stroke care with Emergency Medical System in order to improve quality of life for stroke patients *(Abd‐Allah & Moustafa, 2014).*

Aim of the study:

The aim of this study was to identify factors affecting quality of life for patients with Cerebrovascular stroke. Through the following:

(1) Assessing the physical, social, psychological and spiritual dimension.

(2) Assessing the patient past and present history as regard cerebrovascular stroke

(3) Assessing the patient's knowledge as regard Cerebrovascular stroke.

Research questions:

The current study questions were:

1- What are the factors affecting quality of life for patients with Cerebrovascular stroke?

2- What are the relation between quality of life of patients with cerebrovascular stroke and their demographic data?

Subjects and Methods

Research design:

A descriptive exploratory design used in carrying out the study.

Research Setting:

This study was carried out at Ain Shams University Hospital. (neurology and physiotherapy outpatient clinics).

Subjects:

The purposive sample for the study included one hundred of the patients with cerebrovascular stroke and represented 20% of the patients admitted in the outpatient clinics (neurology and physiotherapy outpatient clinics)where the number of patients admitted last year was 480 patients. The criteria of the studied sample were patients with old cerebrovascular stroke and after three months of disease occurrence as well the patients who are able to communicate with others. The sample size calculation was done based on power analysis. Sample size was calculated using Epicalc 2000 software with the following inputs. The minimal sample size will be 100

- Type I error (α) =5% with confidence level 95%

- Study power 90 % (power of test) with type error II 10% (Beta)

- The significance level (α) at 0.05

Tools for data collection:

The study data were collected through the following two tools:

I-Patient's interview questionnaire sheet: this tool was developed by the investigator in an Arabic language and divided into three parts as the following

(A)Demographic characteristics of patients: The studied sample characteristics included (age, gender, level of education, occupation, level of independency, residence area, income and smoking).

(B) Patients Medical reports: It was used to collect the present and past history of the patient's disease

(C)Patient's knowledge: this parts was developed by the researcher after reviewing the recent and relevant literature which guided by *(O'Callaghan et al., 2012& Chau et al., 2012)*; and divided into 2 parts as the following:

Part I

Patient's general knowledge about cerebrovascular stroke as regard definition (1 questions), risk factors(7questions), warning signs(6 questions), prevention of recurrent stroke, A- healthy factors (5 questions) B- dietary factors (7 questions), medication (7questions), exercise (6 questions) and follow up (3questions). As well the scoring system was graded according the correct answer (1) and incorrect answer (0) with total score (42 scores).

Part II

Patients awareness it was used to assess patient with CVS as regard safety home and security and consisted of 10 Item as follows the existence of wires on the ground, inadequacy of light in the rooms and on the home stairs, tiles and floor of the home, home entrance and the entrances to rooms of the home, carpet furnished is on the ground as well the condition of home stairs, toilet seat, use a razor, low Vision, lack of hearing .Scoring system was graded according to patients response yes (1)& No(0) with total scores (10 scores) The total level of patient's knowledge satisfactory was ≥ 60% while unsatisfactory level was < 60% for two parts.

II- Stroke impact scale (SIS): This scale was used to assess patients with CVS as regard their quality of life which include four dimensions, physical, social, psychological and spiritual dimensions. (SIS) was adapted from *(Lai, Studenski, Duncan & Perera, 2002)* and modified by the investigator according to the aim of the study. The first dimensions (physical) consisted of 28 questions as regard strength which include four questions with five responses ranging as the following a lot of strength (5) , Quite a bit of strength (4), some strength (3), a little strength (2), no strength at all (1) and ability to use affected hand which include five questions, activity of daily living which include ten questions and mobility which include nine questions with five responses for the previous questions ranging as the following not difficult at all (5), a little difficult (4), some what difficult (3), very difficult (2), couldn't do at all (1).

The second dimension (social) consisted of 19 questions as regard communication with others which include twelve questions, memory and thinking which include seven questions with five responses for the previous questions ranging as the following not difficult at all (5),a little difficult (4), some what difficult (3), very difficult (2), extremely difficult (1).

The third dimension (psychological) consisted of 7 questions as regard mood and ability to control emotions .The fourth dimension (spiritual) consisted of 5 questions as regard participation in meaningful activities with five responses ranging as the following none of the time (5), A little of the time (4), some of the time (3), most of the time (2),All of the time (1).

The total score ranged from 59-259, for statistical issue the investigator combined five scale into three scale and then the total grades were as follows:

- Poor quality of life < 50%

- Average quality of life 50 - < 65%

- Good quality of life   > 65 %

Operational design:

The operational design includes preparatory phase, validity, pilot study and field work.

Preparatory phase:

It included reviewing of related literature, and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop the theoretical part of the study and data collection tools.

Validity and reliability:
Content validity was done by7 experts in medical-Surgical nursing specialist. The expertise reviewed the tools for clarity, relevance, comprehensiveness, and simplicity; minor modifications were done. **Reliability** of the study tools was done by alpha Cronbach test (0.98**).**

Pilot study

A pilot study was conducted to test feasibility and applicability of the tools used in this study. It was carried out on 10 patients (10% of total study subjects). The patients who were included in the pilot study were included to the sample because no modification was done after conducting pilot study.

Field work:

The purpose of the study was simply explained to the patients who agreed to participate in the study prior to data collection. The actual work of this study started and completed within five months from January (2015) and was completed by the end of July (2015). Data were collected by the researcher during patient's interview two days per week, at morning and afternoon shift. Sunday from 9.00 am to 1.00pm at physiotherapy outpatient clinic and Wednesday from 12.00 pm to 4.00pm at neurology outpatient clinic in Ain shams university hospital during the patient's attendance to the outpatient clinics for follow up. The time needed for completing the tools was about 30 - 45 minutes for every patient. The patients assured that the information collected would be treated confidential and that it would be used only for the purpose of the study (verbal consent was taken from the patients).

Administrative Design:

To carry out this study, the necessary approval was obtained from the hospital director of Ain Shams University hospital. A letter was issued to them from the faculty of nursing, Ain Shams University explaining the aim of the study to obtain the permission for conducting this study.

Statistical Design:

The collected data were organized, tabulated and statistical analyzed using the statistical package for social science (SPSS). The statistical analysis was done using percentage; range; chi square (X^2); T- test and ANOVA.

The observed differences and associations were considered as follow:

♦ Non significant at P>0.05

♦ Significant at P ≤ 0.05

Results

Table (1) shows the bio socio demographic characteristics of the studied patients with CVS. the mean age of them was 43.5±9.26, as well more than half of them were female and coming from urban area in addition to their need for assistance (54%, 52%,54% respectively). More than three quarter of them had insufficient income (82%) , less than half of them (47%) were read and write. Non employed among the studied patients were represents (71%).

Figure (1) shows that, more than three quarters of the studied sample (80%) had unsatisfactory level of knowledge.

Table (2) this table indicate that the highly affected domains are the physical and social domains with mean score (90.57, 63.86) while the least affected domain is spiritual domain with mean score (14.84).

Figure (2) this figure shows that 70% of the studied patients have poor quality of life in physical dimension and for global quality of life 45% of the studied patients had poor quality of life while only 21% have good quality of life.

Table (3) This table reveals that, there were a statistically significant relation between patient's quality of life and their age as regard physical and social dimensions (f 3.673, 2.948 respectively at P 0.028*, 0.040*) While there were no statistically significant relation between patient's quality of life and their age as regard Psychological and Spiritual dimensions.

Table (4) This table reveals that, there were a statistically significant relation between patient's quality of life and type of stroke as regard Physical, Social and Psychological dimensions (t 2.022, 2.557, 8.125 respectively at P 0.045*, 0.012*, 0.005*) While there were no statistically significant in spiritual dimension.

Table (5) This table reveals that, there was a statistically significant relation between level of patient's knowledge and total quality of life dimensions (t 2.134, 2.043, 2.343, -1.963 respectively at P 0.035*, 0.044*, 0.021*, 0.050*) as increase level of patient's knowledge affected positively on quality of life.

Table (1): Number and percentage distribution for demographic characteristics of the study patients (n=100)

Items	N	%
Age (years)		
30- < 40	7	7%
40- < 50	33	33%
50 or more	60	60%
Mean± SD	43.5±9.26	
Gender		
Male	46	46%
Female	54	54%
Level of education		
Illiterate	39	39%
Read and write	47	47%
Secondary level	13	13%
University level	1	1%
Occupational status		
Employed	29	29%
Non employed	71	71%
Residence		
Rural	48	48%
Urban	52	52%
Income (from patients point of view)		
Sufficient	18	18%
Insufficient	82	82%
Smoking		
Yes	20	20%
No	80	80%
Level of dependent		
Completed	27	27%
Need assistance	54	54%
Independent	19	19%

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Figure (1): Percentage distribution of total patients' Knowledge regarding cerebrovascular stroke
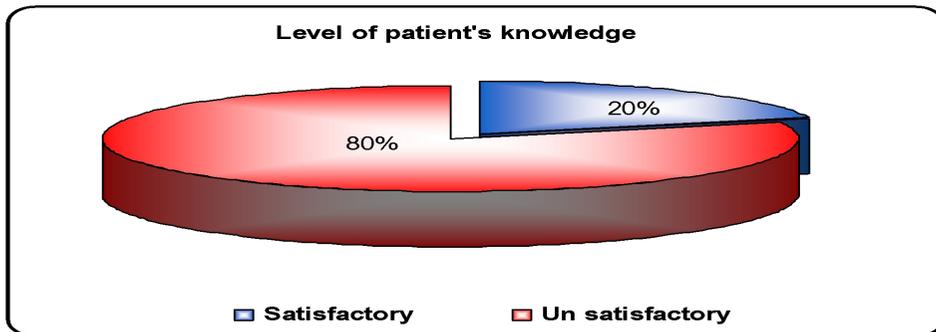
Table (2): distribution of patient's quality of life as regard four dimensions (n =100)

Variables	Mean	±SD	Range
(I)Physical dimensions			
1- Strength	11.45	3.76	4-20
2- Ability to use affected hand	16.19	3.40	10-25
3- Activity of daily living			
4- Mobility	32.44	8.30	14-50
	30.49	8.03	12-45
Total	**90.57**	21.42	48-135
(II)Social dimension			
- Communication with other	39.49	5.26	28-54
-Memory and thinking	24.37	5.37	14-35
Total	**63.86**	63.86	42-89
(III) psychological dimension			
-Mood and ability to control emotions	19.18	3.73	13-28
(IV) Spiritual dimension			
-Participate in meaningful activities.	14.84	3.07	3-22

**Figure (2): Percentage distribution for global QOL according to four dimensions**
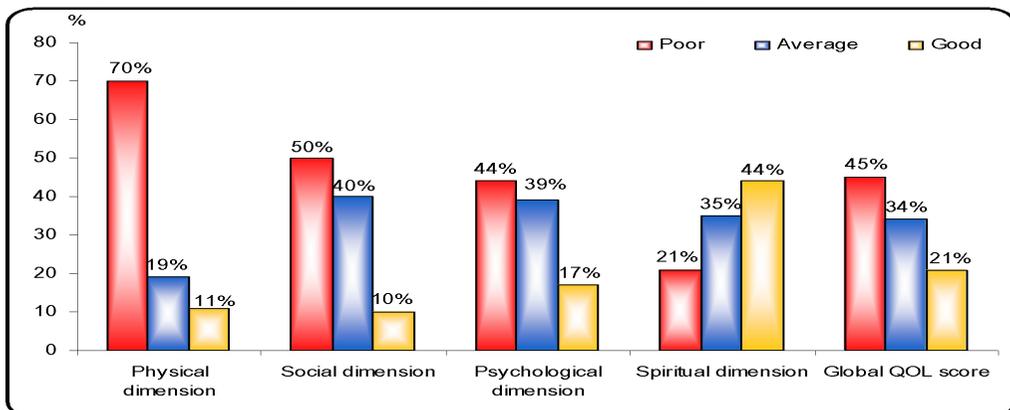
Table (3): Relation between patient's age and quality of life (no= 100)

QOL dimensions	Age (years)							
	30- < 40 years		40- <50		50 +		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	f	P-value
Physical	93.43	12.11	93.58	14.25	88.58	10.10	3.673	0.028*
Social	67.23	7.10	65.55	6.65	63.12	5.93	2.948	0.040*
Psychological	19.57	4.08	18.58	4.14	19.47	3.47	0.644	0.527
Spiritual	13.86	3.02	14.61	4.22	15.08	2.25	0.637	0.531

Significant at P ≤ 0.05   Non significant at P>0.05

Table (4): Relation between quality of life and type of stroke (no = 100)

QOL dimensions	Type of Stroke					
	Ischemic		Hemorrhagic		T-test	
	Mean	±SD	Mean	±SD	t	P-value
Physical	91.72	12.04	83.80	13.64	2.022	0.045*
Social	64.39	6.25	59.10	5.77	2.557	0.012*
Psychological	19.52	3.70	16.10	2.38	8.125	0.005*
Spiritual	14.66	3.00	16.50	3.37	3.316	0.072

Significant at P ≤ 0.05   Non significant at P>0.05

Table (5): Relation between quality of life and patient's knowledge (no = 100)

QOL dimensions	Total knowledge					
	Satisfactory		Unsatisfactory		T-test	
	Mean	±SD	Mean	±SD	t	P-value
Physical	92.75	11.67	88.15	7.71	2.134	0.035*
Social	67.60	7.32	62.93	9.54	2.043	0.044*
Psychological	19.65	4.27	17.46	3.60	2.343	0.021*
Spiritual	15.14	2.36	13.65	4.92	-1.963	0.050*

Significant at P ≤ 0.05   Non significant at P>0.05

Discussion

The results of the present study revealed that, about more than half of the study sample ages ranged between 50 years and more. This result may be due to that old-onset patients more often had hypertension, diabetes mellitus and a higher incidence of large vessel disease and small vessel disease which increase risk for stroke. This finding is consistent with what was reported by *Essa, Helmy & El Batch (2011)* that,

the commonest age group was between 45-65 years and this was significantly high compared with the other age groups. Additionally, at age 55 years, stroke incidence rates double with every decade of life.

Regarding to gender, the present results showed that, more than half of the study samples were females. In incongruent study by *Bushnell et al. (2014)* who reported that more than half of the subjects were male this may be due to stresses of every day life as

females are more weak and sensitive than male.

Concerning level of education, the results reveled that, less than half of the sample can read and write and more than one third of the sample were illiterate. This finding may be due to low socioeconomic status for the patient attending to El demerdash Hospital and the majority of the samples were female. Additionally, it could be explained by cultural and religious aspects as the women tend to remain at home to look after the family.

This finding is consistent with **Dayapoglu &Tan (2010)** who reported that the incidence of stroke was significantly higher among low educated in comparison with highly educated patients and also found that survivors QOL worse in low educated patients as lower levels of education at older patients require more efforts in health promotion and education.

Regarding to occupational status, the results reveled that, more than two third of the sample were none employed. This finding maybe due to that patients post stroke tend to be physically impaired and unable to return to their works additionally the majority of the sample were females. This finding is in accordance with **Zhang, Sun & Xia (2013)** who found that the patients with no occupational activity had lower life satisfaction and poorer QOL and having a job was linked with moderate QOL. Additionally, participation in community activity helps to promote health functions and the ability to achieve health goals.

Regarding to residence, the present results showed that, more than half of the sample were living in urban area; this may be due to availability of the hospital for urban stroke patient's help them to be compliant in their follow up. This finding is in disagreement with **Fawi, Corea, Abbas, Thabit, & Comi (2010)** who found that three fifths of stroke involved residents in rural areas due to insufficient health service in rural community.

Regarding to income, more than three quarters of the sample had insufficient income. This finding may be due to that stroke patients were unable to return to normal work which affected negatively on their income, this finding in agreement with **Baumann, Le Bihan, Chau &Chau, (2014)** who reported that majority of stroke survivors had low income and stroke survivors with low income had a major alteration in quality of life domains.

Regarding to smoking, the results reveled that, one fifth of the sample were smokers, this finding may be due to smoking habit more diffuse in the male gender. This result goes in the same way with **Sloma, Backlund & Strender (2010)** who found that about one fifth of the studied patients were smokers. Smoking duples the risk for stroke and QOL for smoker stroke survivors deteriorated more than non smoker.

Regarding to level of dependence, the present results showed that, more than half of the sample need assistance in activity of daily living, this finding may be due to the presence of physical impairment following stroke. This result is in accordance with **Takemasa et al., (2014)** who found that, mobility decline is an essential concern in chronic stroke patients, especially because it might lead to dependence in activities of daily living, which affects social reintegration.

As regard patient's total level of knowledge the present results showed that, most of the studied sample had unsatisfactory level of knowledge about Cerebrovascular stroke, this might be attributed to the fact that more than one third of the sample were illiterate. So, they cannot read or seek information about cerebrovascular stroke. This result is in agreement with ***Sloma, Backlund & Strender (2010)*** who reported that the satisfactory level of knowledge for stroke survivors is strongly associated with good quality of life. Additionally, efforts to prevent stroke rely on an individual's knowledge, whereas optimal stroke outcomes depend on the patient's awareness.

Concerning patient's quality of life the present study revealed that, the highly affected dimensions are the Physical and Social dimensions with the highest mean score for the physical dimensions, by evaluation for physical quality of life the current study showed that more than three fifth of the patients had poor quality of life . This finding is supported with ***Stewart &Cramer(2013)*** who found that difficulty with hand movements , ability to perform ADL and reduced arm use by the motor activity influenced negatively on physical functions. Physical well-being is the most affected component and deterioration is more permanent than that of mental health.

The researcher opinions are that result may be due to that the majority of post stroke patients are physically impaired which hinder their ability to perform ADL; additionally, the main determinant of QOL is the functional disability level. Physical functioning is the main factor influencing QOL. For social quality of life the patients consider impairment associated with stroke as a stigma and also hinder them to perform social activities, (visiting relatives and friends) which lead to social isolation

Additionally,***Zalihic, Markotic, Zalihic & Mabic (2010)*** reported that patients with stroke are at greater risk for physical dependence and social isolation, also patients with higher level of aids may have worse out come for their QOL because they rely on help from others.

Additionally, for global QOL, the present study showed that less than half of the studied patients have poor quality of life and only less than one quarter had good quality of life ***Abubakar & Isezuo (2012)*** Highlighted health related quality of life in stroke survivors and this study result revealed that less than half of the survivors had poor outcome as a global quality of life.

The present study results revealed that, the highly affected QOL parameter were physical and social quality of life, while the least affected parameter were noted for psychological and spiritual quality of life. This finding is consistent with ***Alguren, Fridlund, Cieza, Sunnerhagen, &Christensson (2012)*** who reported that the importance of body functions , activities and participation (mainly personality functions , recreation and leisure) on HRQOL post stroke, but increased impact of environmental factors on HRQOL. In the researcher's opinion This may be due that most of the studied patients were supported by good religious beliefs.

The present study findings showed that, there is a significant relation between patient's quality of life and their age in physical and social domains, patients aged ≥ 50 years had the lowest mean scores with regard to physical and social domains. This

finding is consistent with *Zhang, Sun & Xia (2013)* who reported that older patients had lower HRQOL in both mental and physical health aspects after discharge as the physical needs for the older patients were more than younger patients. Additionally, they reported that age had a powerful influence on quality of life of stroke survivors. This could be explained by the fact that This may due to some extent, be attributed to the age-related functional decline and the older patients generally recover more slowly.

This study revealed that, there were a statistically significant relation between patients' quality of life and type of stroke as regard physical, social and psychological dimensions. As the patient with ischemic stroke had better quality of life than patients with hemorrhagic stroke. This result goes in the same way with *Meyer et al.(2010)* who stated that HRQOL in subarachanoid hemorrhage (SAH) patients was considerably reduced compared to the ischemic stroke patients. The long-term HRQOL outcome after SAH is unfavorable.

In the researcher's point of view this could be that patients with hemorrhagic stroke had suffered more severe stroke, resulting in higher rates of impaired consciousness at stroke onset followed by more impaired physical ability after that.

The findings of the current study illustrated that, were a statistically significant relation between level of patient's knowledge and total quality of life dimensions. This result goes in the same way with *Baumann et al.(2014)* who reported that dissatisfaction with information about stroke were associated with low quality of life in a number of dimensions especially in mobility and self care as sufficient

information help to received coordination between service.

Also this result is in accordance with *Forster et al.(2012)* who stated that, majority of the patients had unsatisfactory level of information about stroke. Additionally appropriate information has important consequences for compliance with secondary prevention and the longer term psycho - social out come. Enhanced knowledge for stroke survivors may improve the quality of life. The researcher's point of view knowledge is the most important strategy to enhance quality of life, patients with satisfactory knowledge more compliant in follow up, medication, follow healthy life style which consider a predictor for good QOL.

Conclusion

The results of this study concluded that the factors that significantly affect QOL for patients with cerebrovascular stroke were (age, sex, educational level, level of patient's dependency, residence, patient's income) and presence of co-existing diseases, type of stroke, duration of stroke and level of knowledge. As well, there were statistically significant differences between the studied patients quality of life and the socio demographic variables especially level of patient's dependency as regard CVS.

Recommendations

• Structured and comprehensive rehabilitative intervention aimed to facilitate social participation and overcome limitations in performing daily activities can be beneficial to improve the QOL for the patients with stroke.

• Designing patient's educational program to improve their knowledge for cerebrovascular stroke.

• Provide illustrated booklet for patients with cerebrovascular stroke including comprehensive guide line about CVS.

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