

ASSOCIATION BETWEEN SELF-ESTEEM, DEPRESSION, SOCIAL SUPPORT AND QUALITY OF LIFE AMONG PATIENTS WITH CEREBROVASCULAR ACCIDENT AND SPINAL CORD INJURY

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(Received 15 June 2017; accepted 28 November 2017; published online 29 January 2018)

To cite this article: Ugboh, E. & Hammed, A. I. (2018). Association between self-esteem, depression, social support and quality of life among patients with cerebrovascular accident and spinal cord injury. *Movement, Health & Exercise, 7(1), 43-56.*

<http://dx.doi.org/10.15282/mohe.v7i1.155>

Link to this article: <http://dx.doi.org/10.15282/mohe.v7i1.155>

Abstract

Study aim: The study determined the association between self-esteem, depression, social support and quality of life among patients with cerebrovascular accident (stroke) and spinal cord injury. **Material and methods:** The study adopted a cross-sectional survey research design. A total of 60 participants (30 stroke patients and 30 spinal cord injured patients) participated in this study. The selected psychosocial variables such as Depression and Self Esteem were assessed using Beck Depression Inventory Questionnaire (BDI) and Self Esteem Questionnaire (SE) respectively. Also, social support and quality of life were assessed using Social Support Questionnaire (SSQ6) and Short Form (SF-36) Health Questionnaire respectively. The association between social support, depression, self-esteem and quality of life in both spinal cord injury and stroke patients and the demographic variables were analyzed using Spearman rho. However, independent sample t-test was used to analyze the difference between social support, depression, self-esteem and quality of life in spinal cord injury and social support, depression, self-esteem and quality of life in stroke. **Results:** The outcome of this study showed that there is a significant difference in depression between both stroke and spinal cord injury patients ($p < 0.05$). The findings also showed a significant association between depression, quality of life and age in stroke patients. Equally, there was a significant association between depression, social support, and age in spinal cord injury patients. **Conclusion:** It was therefore concluded that even though stroke patients receive more social support and have a higher quality of life, they are still more depressed and have lower

self-esteem compared to spinal cord injury patients. It was thus recommended that physiotherapists and other health professionals should make an appropriate assessment of the quality of life, self-esteem, depression and social support of stroke and spinal cord injury patients to enable proper management of these individuals.

Keywords: Psychosocial characteristics, cerebrovascular accident, and spinal cord injury

Introduction

Cerebrovascular accident (stroke) is the sudden death of some brain cells due to lack of oxygen to the brain when the blood flow to the brain is impaired by blockage or rupture of an artery. Despite advances in the acute management of stroke globally, a large proportion of stroke patients are left with significant impairments and decreased psychosocial functioning. In fact, stroke is the second most common cause of death and a major cause of permanent disability worldwide (Pan, Sun, Okereke, Rexrode, & Hu, 2011). According to the authors, stroke greatly impacts the quality of life of survivors and is an immense public health burden. Similarly, stroke survivors are often left with physical impairments that limit functional abilities and also result to depression (Duncan, Mayo, Wood Dauphinee, Cote, & Carlton, 2002). Also, with the population aging and lifestyle changing, the burden is projected to increase markedly during the next 20 years, especially in developing countries (Giroud, Jacquin, & Bejot, 2014). Moreover, stroke can be devastating to individuals and their family members, robbing them of their independence and many people who have had stroke live with physical, psychological and functional limitations (Dombovy, Basford, Whisnant, & Bergstralh, 2007). Stroke is an important cause of morbidity and mortality in Africans. Specifically, stroke accounts for 0.5 to 45% of neurological admissions in Africa and has been found to be the eighth leading cause of death in Nigeria (Agyemang, Addo, Bhopal, Aikins-Ade, & Stronks, 2009). In addition, about 75% of patients with stroke experience difficulties with daily living activities (Kyung, Young & Eun, 2014). Equally, if stroke occurs after the age of 65 years, about 80% of the survivors will experience chronic disability (Barker & Mullooly, 2003).

On the other hand, spinal cord injury (SCI) has been described as one of the greatest calamities that can befall humans (Guttmann, 1973). Spinal cord injury is the loss of some or all of an individual's sensation and movement. It often leads to permanent neurological injury and a range of associated consequences such as paralysis, loss of function, change to bowel, bladder and sexual function and loss of functional abilities such as walking (Harvey & Leinwand, 2008). Consequently, not only does spinal cord injury affect a person's physical function but also their psychological wellbeing. Likewise, most spinal cord injury patients who contemplate being forced to live this way cannot see anything but a life of low quality and conclude that they would rather be dead (Gerhart, Koziol-McLain, Lowenstein, & Whiteneck, 1994). In addition, spinal cord injury refers to impairment or loss of motor and/or sensory function in the cervical, thoracic, lumbar or sacral segment of the spinal cord secondary to damage of neural

elements within the spinal canal (Marino, Hoogervorst, Brandner, & Berns, 2003). Equally, spinal cord injury is divided into complete and incomplete spinal cord injury. Some people with spinal cord injury very rationally decide to commit suicide (Maynard & Muth, 1987), and they may do this during the period of depression and despair that is not uncommon after spinal cord injury (Kewman & Tate, 1998). The suicide rate among individuals with spinal cord injury is about five times as high as the population at large (Dijkers, Buda-Abela, Gans, & Gordon, 1995). However, most people with spinal cord injury eventually "adjust" to their new body and the lifestyle it imposes and state that they would not have wanted to be allowed to die (Gardner, Theocleous, Watt, & Krishnan, 1985). They seem to have, and report, a life of acceptable quality, especially individuals who live in developed countries; have access to medical care, adaptive equipment, and economic and social support; and live in cities and towns where housing, public buildings, public spaces, and transportation increasingly are accessible (Allotey, Reidpath, Kouame, & Cummins, 2003). Spinal cord injury can be a devastating and traumatic event and can happen to persons of any age. People with spinal cord injuries are 2 to 5 times more likely to die prematurely, with worse survival rates in low and middle-income countries (WHO, 2013).

Many studies have found a higher prevalence of depression in spinal cord injury and stroke patients than apparently healthy individuals (Hoffman, Bombardier, Graves, Kalpakjian, & Krause, 2011). The occurrence of depression is associated with both the occurrence of secondary medical complications and decrease self-esteem in patients with neurological problems (stroke and spinal cord injuries) which result to difficulty in community reintegration (Elliott & Shewchuck, 2006). Community reintegration is one of the most important elements of stroke and spinal cord injury rehabilitation (Obembe, Johnson, & Fasuyi, 2010). Reintegration to normal living has been defined as the reorganization of physical, psychological and social characteristics. Many stroke and spinal cord injury patients express a low level of satisfaction with community reintegration after their discharge from the hospital and return to community living (Carter, Buckley, Ferraro, Rerraro, & Ogilvy, 2000). A longitudinal study by Saunders, Krause, and Focht (2012) examined the prevalence of depression in persons with spinal cord injury over a five year period. The result showed that while the prevalence of depression appears to be fairly stable over time, demographic factors do play a role in its presence as well as health behaviours such as exercise and the time spent out of the house. One of the strongest predictors of depression in persons with spinal cord injury, however, is the level of pain (Craig, Tran, & Middleton, 2009). Although, the direct effects of the conditions, as well as the effects of the treatment, may influence the quality of life in patients with neurological illnesses like stroke and spinal cord injury (Baune & Aljeesh, 2006). A significant study conducted by Park, Im, Oh, Lee, and Pae (2015) examined the quality of life and psychological problems in patients with neurological illnesses and observed that depression has a worse effect on quality of life and functional abilities of these patients. Mood disorders including anxiety and depression are also commonly experienced by patients after stroke and reviews of studies assessing interventions for these conditions have found that robust evidence is lacking (Campbell Burton et al., 2011).

Nevertheless, there is too little focus on psychosocial goals in spinal cord and stroke rehabilitation, therefore to improve rehabilitation programs for patients with spinal cord injury and stroke, it is necessary to better understand their psychosocial functioning. Hence, the researcher saw the need to further research on the influence of selected psychosocial characteristics (quality of life, self-esteem, social support, and depression) among patients with cerebrovascular accident and spinal cord injury. It was also observed that most health care professionals do not pay adequate attention to the psychosocial factors (quality of life, depression, self-esteem and social support) which are believed to affect stroke and spinal cord injury patients' recovery. There is no doubt that stroke and spinal cord injury patients face psychosocial maladjustment due to long-term stress and strain which reduces their subjective evaluation ability (Gulick, 1997). Similarly, most of these patients also experience role changes due to impaired autonomy caused by difficulty with performing daily living activities as well as a problem with interpersonal relationship (Aaronson et al., 2000). Thus, in order to live an independent life, it is important to deal with the psychological and social consequences of stroke and spinal cord injury which could help to optimize their victims' ability to perform basic and instrumental activities of daily living and enhance their community reintegration.

Research hypotheses

The following hypotheses were formulated and tested at 0.05 alpha level.

1. There would be no significant difference between:
 - Social-support in spinal cord injury patients compared to social support in stroke patients
 - Depression in spinal cord injury patients compared to depression in stroke patients
 - Self-esteem in spinal cord injury patients compared to self-esteem in stroke patients
 - Quality of life in spinal cord injury patients compared to quality of life in stroke patients
2. There would be no significant association between:
 - Social support in spinal cord injury patients and the demographic variables (age, sex, marital status, occupation and level of skill)
 - Self-esteem in spinal cord injury patients and the demographic variables (age, sex, marital status, occupation, and level of skill)
 - Depression in spinal cord injury patients and the demographic variables (age, sex, marital status, occupation and level of skill)
 - Quality of life in spinal cord injury patients and the demographic variables (age, sex, marital status, occupation and level of skill)
3. There would be no significant association between:
 - Social-support in stroke patients and the demographic variables (age, sex, marital status, occupation and level of skill)

- Self-esteem in stroke patients and the demographic variables (age, sex, marital status, occupation and level of skill)
- Depression in stroke patient and the demographic variables (age, sex, marital status, occupation and level of skill)
- Quality of life in stroke patient and the demographic variables (age, sex, marital status, occupation and level of skill)

Material and methods

Research design

This study is a correlational survey design of the association between self-esteem, depression, social support and quality of life among patients with cerebrovascular accident and spinal cord injury.

Population

The population for this study included patients with spinal cord injury and cerebrovascular accident (stroke) receiving physiotherapy treatment in the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla Enugu, National Orthopaedic Hospital, Enugu (NOHE) and the Physiotherapy Unit of 82 Division Military Hospital, Enugu.

Sample size and sampling technique

This research work consists of 60 respondents; 30 stroke patients and 30 spinal cord injury patients. They were recruited using the proportionate random sampling technique. However, spinal cord injury patients and stroke patients with other neurological impairments or with any other disabilities were excluded from the study.

Data collection instruments

Social Support Questionnaire 6 (SSQ6) (Sarason & Pierce, 1987) was used to assess the social support of the participants. It is a 14-item questionnaire to measure the perceived adequacy of support given by three different sources: family (four items), friends (four items), and significant other persons (four items). All items were rated on a six point Likert scale ranging from 1 (strongly agreed) to 6 (strongly disagreed).

Beck Depression Inventory (Beck, 1996) was used to assess the severity of depression of participants. It has 21 items corresponding to a symptom of depression and a four-point scale for each item ranging from 0 to 3. It also provided information on one's feeling and how well participants were able to complete their usual activities which are both physically and emotionally based.

State Self Esteem (Heatherton & Polivy, 1991) was used to assess the state of self-esteem of participants. The Self Esteem (SSE) questionnaire is sub-divided into three

which include Performance Self Esteem, Social Self Esteem, and Appearance Self Esteem. All items were answered using a 5-point scale as seen in the questionnaire.

The short form-36 (SF-36), a 36-item tool structured into 8 domains – namely, physical functioning (PF), role limitations due to physical health problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitation due to emotional problems (RE), and mental health (MH) – was used to assess quality of life of the participants.

Validity and reliability of data collection instruments

The Social Support Questionnaire 6 (SSQ6), the Beck Depression Inventory, the State Self Esteem and the SF-36 are internationally validated generic questionnaires, and their reliability was calculated to be 0.87 to 0.91 ($r = 0.87-0.91$), 0.70 to 0.76 ($r=0.70-0.76$), 0.74 to 0.82 (0.74-0.82) and 0.84 to 0.93 (0.84-0.93) respectively.

Data collection procedure

Ethical approval was sought for and obtained from the Medical Research and Ethics Committee of University of Nigeria Teaching Hospital, Ituku-Ozalla (NHREC/05/01/2008B-FWA00002458-1RB00002323) and National Orthopaedic Hospital, Enugu (IRB/IEC NUMBER: 5/313/1111, PROTOCOL NUMBER: 983). Participants were informed about the research and duly signed informed consent forms were obtained from them before their participation in the study. The participants' demographic details were recorded using an exercise book. The various outcome measures as itemized above were then administered face to face by the researcher to the participants, and there was 100% retrieval. All items in each measure were scored on a scale of 0 to 100, with 100 representing the highest level of psychosocial functioning possible. Aggregate scores were compiled as a percentage of the total points possible for each measure.

Data analysis

The data obtained from this study were analyzed using descriptive and inferential statistics. Descriptive statistics of percentage and frequency were used to summarize the demographic characteristics of the participants. Association between social support, depression, self-esteem and quality of life in both spinal cord injury and stroke patients and the demographic variables were analyzed using Spearman rho. Also, independent sample t-test was used to analyze the difference between social support, depression, self-esteem and quality of life in spinal cord injury and social support, depression, self-esteem and quality of life in stroke. All inferential analyses were performed at 0.05 alpha levels using the Statistical Package for the Social Sciences (SPSS) version 20.0.

Results

The results are presented in Tables 1 - 3. Table 1 shows the mean distribution of the participant variables such as social support, depression, self-esteem, and quality of life for the two groups (stroke and spinal cord injury). The mean score and standard deviation of stroke and spinal cord for social support are 24.33 ± 5.054 and 23.23 ± 4.207 , 10.13 ± 4.614 and 8.10 ± 3.067 for depression, 73.23 ± 5.740 and 75.43 ± 3.683 for self-esteem, 29.20 ± 2.917 and 28.00 ± 2.639 for the quality of life. Therefore, table 1 shows that stroke patients had more social support and quality of life than spinal cord injury patients. Depression was more in stroke patients compared to spinal cord injury patients. Stroke patients had low self-esteem compared to spinal cord injury patients. The table also shows that there is a significant difference between depression in spinal cord injury and depression in stroke ($p < 0.05$) and no significant difference between social support, self-esteem and quality of life in spinal cord injury patients and stroke patients ($p > 0.05$).

Table 1: T-test analysis of the significant difference between social support, depression, self-esteem and quality of life in spinal cord injury and social support, depression, self-esteem and quality of life in stroke.

Variable	Group	Number	Mean	St. Deviation	Mean difference	T	P-value
SS	Stroke	30	24.33	5.054	1.1	0.916	0.363
	Spinal cord	30	23.23	4.207			
DEP	Stroke	30	10.13	4.614	2.03	2.010	0.049
	Spinal cord	30	8.10	3.067			
SE	Stroke	30	73.23	5.740	-2.2	-1.767	0.083
	Spinal cord	30	75.43	3.683			
QOL	Stroke	30	29.20	2.917	1.2	1.671	0.100
	Spinal cord	30	28.00	2.639			

SS- social support, DEP- Depression, SE- Self Esteem, QOL- quality of life, T-test statistics

Table 2 shows that there was no significant association between self-esteem in spinal cord injury patients and all demographic variables ($p > 0.05$). There was no significant association between quality of life in spinal cord injury patients and all demographic variables. There was no significant association between depression and social support in spinal cord injury patients and all the demographic variables except age.

Table 2: Correlation matrix of participants showing association between social support, depression, self-esteem and quality of life in spinal cord injury patients and the demographic variables (n=30)

Variable		SS	DEP	SE	QOL
Age	R	0.394	0.683	-0.234	-0.351
	p	0.031*	0.000*	0.213	0.057
Sex	R	-0.229	-0.100	-0.220	0.076
	p	0.225	0.598	0.242	0.688
MS	R	0.247	0.344	-0.110	-0.247
	p	0.189	0.063	0.564	0.187
Occupation	R	0.025	0.051	0.070	-0.056
	p	0.897	0.790	0.713	0.770
Level of skill	R	-0.012	0.193	0.001	-0.230
	P	0.951	0.306	0.995	0.221

SS- social support, DEP- Depression, SE- Self Esteem, QOL- quality of life, MS- marital status, r- correlation

Table 3 shows that there was no significant association between social support in stroke and all the demographic variables ($p>0.05$). There was no significant association between self-esteem and all the demographic variables. There was no significant association between depression and quality of life in stroke and all the demographic variables except age.

Table 3: Correlation matrix of participants showing association between social support, depression, self-esteem and quality of life in stroke patients and the demographic variables (N=30).

Variables		SS	DEP	SE	QOL
Age	R	0.332	0.626	-0.100	-0.460
	p	0.073	0.000*	0.600	0.010*
Sex	R	-0.176	-0.099	-0.191	0.140
	p	0.351	0.604	0.312	0.461
MS	R	0.293	0.312	-0.075	-0.214
	p	0.116	0.093	0.695	0.257
Occupation	R	0.091	-0.021	0.157	-0.027
	P	0.631	0.911	0.407	0.889
Level of skill	R	-0.063	0.272	-0.015	-0.225
	P	0.740	0.146	0.939	0.233

SS- social support, DEP- Depression, SE- Self Esteem, QOL- quality of life, MS- marital status, r- correlation

Hypotheses testing

Hypothesis 1

There would be no significant difference between social support, self-esteem, depression, and quality of life in spinal cord injury patients compared to social support, self-esteem, depression and quality of life in stroke patients.

- 1) Test statistic: t-test
t= 0.916(social support), 2.010(depression), -1.767(self-esteem), 1.671(quality of life)
- 2) P-value: 0.363(social support), 0.049(depression), 0.083(self-esteem) and 0.100(quality of life)
- 3) Judgement: Since there is a significant difference between depression in stroke compared to depression in spinal cord injury ($p=0.049<0.05=\alpha$), the null hypothesis is rejected for depression. There is no significant difference between social support, self-esteem and quality of life in spinal cord patients compared to stroke ($p=0.363, 0.083$ and $0.100> 0.05=\alpha$). The null hypothesis is retained for social support, self-esteem, and quality of life.

Hypothesis 2

There would be no significant association between social support, depression, self-esteem, quality of life and the following demographic variables: age, sex, marital status, occupation and level of skill in spinal cord injury patients.

- 1) Test statistic: spearman rho
- 2) P-value= Social support: 0.031(age), 0.225(sex), 0.189(marital status), 0.897(occupation) and 0.951(level of skill); depression: 0.000(age), 0.598(sex), 0.063(marital status), 0.790(occupation) and 0.306(level of skill); self-esteem: 0.213(age), 0.242(sex), 0.564(marital status), 0.713(occupation) and 0.995(level of skill); quality of life: 0.057(age), 0.688(sex), 0.187(marital status), 0.770(occupation) and 0.221(level of skill).
- 3) Judgement: Since P-value is less than 0.05 for the association between social support, depression, and age only, the null hypothesis is rejected for the association between social support, depression, and age but is retained for others.

Hypothesis 3

There would be no significant association between social support, depression, self-esteem, quality of life and the following demographic variables: age, sex, marital status, occupation and level of skill in stroke patients.

- 1) Test statistic: spearman rho
- 2) P-value = Social support: 0.073 (age), 0.351 (sex), 0.116 (marital status), 0.631 (occupation) and 0.740 (level of skill); depression: 0.0001 (age), 0.604 (sex), 0.093 (marital status), 0.911 (occupation), 0.146 (level of skill); self-esteem: 0.600 (age), 0.312 (sex), 0.695 (marital status), 0.407 (occupation), 0.939 (level of skill); quality of life: 0.010 (age), 0.461 (sex), 0.257 (marital status), 0.889(occupation), 0.233(level of skill).
- 3) Judgement: Since P-value is less than 0.05 for the association between depression, quality of life and age only, the null hypothesis is rejected for the association between depression, quality of life and age but is retained for others.

Discussion of findings

The results of this study show that there was a significant difference in the level of depression between both spinal cord injury and stroke patients. The stroke patients were observed to be more depressed than the spinal cord injury patients. The reason for this could be lack of confidence, overprotection by caregivers and largely reduced function of the affected upper limb. This indicates that education about stroke and post-stroke depression to family and other caregivers must be intensified. Likewise, the findings of this study also revealed that social support from families is still available and may, therefore, need the training to look after patients with stroke to reduce overprotection, burnout, back injuries and further trauma to the paralysed limbs of the stroke patient. These findings are in agreement with the works of Hoffman et al. (2011) and Campbell Burton et al. (2011) who also discovered a significant difference between depression among spinal cord injury and stroke patients. He, therefore, concluded that most patients with stroke should turn to religion, accept their disability, engage in new roles/activities and accept social support in order to adjust to the effects of stroke.

Moreover, results from this study indicated that depression and quality of life show significant association with age among stroke patients. The level of depression may rightly be expected to increase with increasing age. Depression is a common psychological impairment and may lead to deterioration of the patient's quality of life at the long-run. This finding is in contrast with the work of Bowling (2007) which showed that among men over the age of 65 years, those who have a high quality of life were greater and 6 times less likely to sustain psychological morbidity including depression, compared with those with middle-low self-efficacy. This contrasting finding might not be unconnected to variation in study methodology including subject characteristics such as being black individuals, differences in measuring instruments of psychosocial characteristics and the like.

The findings of this study show that there was a significant association between depression, social support in spinal cord injury patients and age. This finding is in agreement with the study of Saunders et al. (2012) that examined the prevalence of depression in persons with spinal cord injury over a five year period and submitted that demographic factors such as age do play a significant role in the occurrence of depression among patients with spinal cord injury. In fact, Hoffman et al. (2011) found a higher prevalence of depression in spinal cord injury and stroke patients than apparently healthy individuals and concluded that depression is the most common form of psychological impairment in spinal cord injury and stroke patients. Spinal cord injuries often have psychological consequences, primarily anxiety and depression, which may interfere with rehabilitation possibilities, with adjustment to the impairment and therefore with the possibility of returning to previous familiar social life and work. Depending on the extent of their loss, spinal cord injury patients often present anxiety and depression (Judd, 1986). Apart from immobility and loss of sensation which increases in severity with age, spinal cord injury patients experience other unpleasant effects, such as pain and impaired urinary and sexual functioning; these physical symptoms often result in vocational and social losses. This agrees with the work of

Hancock (1993) which reported that older patients tend to be less well adjusted in the society.

Conclusion

It was concluded from this study that:

- Even though stroke patients receive more social support and have a higher quality of life, they are still more depressed and have a lower self-esteem compared to spinal cord injury patients.
- Age influences depression and quality of life in stroke patients.
- Age influences social support and depression in spinal cord injury patients
- Based on the findings from the present study, the following recommendations were made:
- Health professionals should make an appropriate assessment of the quality of life, self-esteem, depression and social support of stroke and spinal cord injury patients to enable proper management of the conditions.
- There is a need for the education of caregivers and families of stroke and spinal cord injury patients on the importance of social support and community reintegration on the well-being of stroke and spinal cord injury patients.
- There is a need for more prospective research which may incorporate a large sample size to enable adequate generalization of the study and for additional knowledge on the psychosocial factors that affect stroke and spinal cord injury patients.

References

- Aaronson, L. S., Teel, C. S., Cassmeyer, V., Neuberger, G. B., Pallikkathayil, L., & Pierce, J. (2000). Defining and Measuring Fatigue Impact. *The Journal of Nursing Scholarship*, 31(1), 45-50.
- Agyemang, C., Addo, J., Bhopal, R., Aikins-Ade, G. & Stronks, K. (2009). Cardiovascular Disease, Diabetes and Established Risk Factors among Populations of Sub-Saharan African descent in Europe: A literature review. *Global Health*, 5, 7.
- Allotey, P., Reidpath, D., Kouame, A., & Cummins, R. (2003). The DALY, context and the determinants of the severity of disease: An exploratory comparison of paraplegia in Australia and Cameroon. *Social Science & Medicine*, 57(5), 949–58.
- Barker, W. H. & Mullooly, J. P. (2003). Stroke in define elderly population: A less lethal and disabling but no less common disease. *Stroke*, 28, 284-290.
- Baune, B. T. & Aljeesh, Y. (2006). The association of psychological stress and health related quality of life among patients with stroke and hypertension in Gaza strip. *Annals of General Psychiatry*, 1744-859.

- Bowling, A. (2007). Gender-specific and gender-sensitive associations with psychological health and morbidity in older age: Baseline findings from a British population survey of aging. *Aging Mental Health*, 11, 301–309.
- Campbell Burton, C. A., Holmes, J., Murray, J., Gillespie, D., Lightbody, C. E., & Watkins, C. L. (2011). Interventions for treating anxiety after stroke. *Cochrane Database of Systematic Reviews*, 12, CD008860.
- Carter, B. S., Buckley, D. R. N., Ferraro, R., Rerraro, G., & Ogilvy, C. (2000). Factors associated with reintegration to normal living after subarachnoid haemorrhage. *Neurosurgery*, 46, 1326-1334.
- Craig, A., Tran, Y., & Middleton, J. (2009). Psychological morbidity and spinal cord injury: A systematic review. *Spinal Cord*, 47, 108-114.
- Dijkers, M., Buda-Abela, M., Gans, B. M., & Gordon, W. (1995). The aftermath of spinal cord injury. *Journal of Neurosurgery*, 94, 728-732.
- Dombovy, M. L., Basford, J. R., Whisnant, J. P., & Bergstralh, E. J. (2007). Disability and Use of Rehabilitation Services Following Stroke in Rochester, Minne. *Stroke*, 18, 830–836.
- Duncan, L. Mayo, N. E., Wood Dauphinee, S., Cote, R., & Carlton, J. (2002). Activity, Participation, and quality of life 6 months post stroke. *Archives of Physical Medicine Rehabilitation*, 83, 1035-1042.
- Elliott, T. & Shewchuck, R. (2006). Social support and leisure activities following severe physical disability: testing the mediating effect of depression. *Basic and Applied Social Psychology*, 16, 471-487.
- Gardner, B. P., Theocleous, F., Watt, J. W., & Krishnan, K. R. (1985). Ventilation or dignified death for patients with high tetraplegia. *British Medical Journal (Clinical Research Edition)*, 291(6509), 1620–22.
- Gerhart, K. A., Koziol-McLain, J., Lowenstein, S. R., & Whiteneck, G. G. (1994). Quality of Life Following Spinal Cord Injury: Knowledge and Attitudes of Emergency Care Providers. *Annals of Emergency Medicine*, 23(4), 807–12.
- Giroud, M., Jacquin, A., & Bejot, Y. (2014). The worldwide landscape of stroke in the 21st century. *Lancet*, 383, 195-197.
- Gulick, E. E. (1997). Correlates of quality of life among person with multiple sclerosis. *Nursing Research*, 46, 305-311.
- Guttmann, L. (1973). *Spinal cord injuries: Comprehensive management and research*. London: Blackwell Scientific Publications.

- Hancock, K. M. (1993). Anxiety and Depression over the First Year of Spinal Cord Injury: A Longitudinal Study. *Paraplegia*, 31, 349-357.
- Harvey, S. & Leinwand, C. G. (2008). Activity, Participation, and quality of life 6 months post stroke. *Archives of Physical Medicine Rehabilitation*, 83, 1035-1042.
- Heatherton, T. F. & Polivy, J. (1991). Development and validation of a scale for measuring state self- esteem. *Journal of Personality and Social Psychology*, 60, 895-910.
- Hoffman, J. M., Bombardier, C. H., Graves, D. E., Kalpakjian, C. Z., & Krause, J. S. (2011). A longitudinal study of depression from 1- 5 years after spinal cord injury. *Archives of physical medicine and rehabilitation*, 92(3), 411-418.
- Judd, F. K., Burrows, G. D., & Brown, D. J. (1986). Depression following acute spinal cord injury. *Paraplegia*, 24, 358-363.
- Kewman, D. G. & Tate, D. G. (1998). Suicide in SCI: A psychological autopsy. *Rehabilitation Psychology*, 43(2), 143-51.
- Kyung, K., Young, M. K., & Eun, K. K. (2014). Correlation between the Activities of Daily Living of Stroke Patients in a Community Setting and their Quality of Life. *Journal of Physical Therapy Science*, 26, 417-419.
- Marino, S., Hoogervorst, D., Brandner, S., & Berns, A. (2003). *Disability Health Journal*, 7(2), 164-172.
- Maynard, F. M. & Muth, A. S. (1987). The choice to end life as a ventilator-dependent quadriplegic. *Archives of Physical Medicine and Rehabilitation*, 68(12), 862-64.
- Obembe, A. O., Johnson, O. E., & Fasuyi, T. F. (2010). Community reintegration in stroke survivors in Osun, South Western Nigeria. *African Journal of Neurological Sciences (AJNS)*, 29(1), 9-16.
- Pan, A., Sun, Q., Okereke, O. I., Rexrode, K. M., & Hu, F. B. (2011). Depression and Risk of Stroke Morbidity and Mortality: A Meta-Analysis and Systematic Review. *Journal of the American Medical Association (JAMA)*, 306(11), 1241-1264.
- Park, G. Y., Im, S., Oh, C. H., Lee, S. J., & Pae, C. U. (2015). The association between the severity of poststroke depression and clinical outcomes after first-onset stroke in Korean patients. *General Hospital Psychiatry*, 37(3), 245-250.
- Saunders, L. L., Krause, J. S., & Focht, K. L. (2012). A longitudinal study of depression in survivors of spinal cord injury. *Spinal cord*, 50(1), 72-77.

Vestling, M., Tufvesson, B., & Iwarsson, S. (2003). Indicators for return to work after stroke and the importance of work for subjective well-being and life satisfaction. *Journal of Rehabilitation Medicine*, 35, 127–131.

World health organization (WHO) (2002). Global burden of disease: Estimate world health report.

World health organization (WHO) (2013). International perspectives on spinal cord injury.