



Factors Associated with Health-related Quality of Life among Post-paralytic Polio Survivors in Nigeria

Kaka B¹, Ogwumike. O.O.², Adeniyi. A.F.²

¹Physiotherapy Department, King Fahd Ibn Abdul-Aziz Women and Children Hospital, Gusau, Zamfara State, Nigeria.

²Physiotherapy Department, College of Medicine, University of Ibadan, Ibadan, Nigeria.

Correspondence

B. Kaka, Physiotherapy Department, King Fahd Ibn Abdul-Aziz Women and Children Hospital, Gusau, Zamfara State, Nigeria • E mail: kakabashir2000@yahoo.co.uk

SUMMARY

The purpose of this study was to assess Quality of Life (QOL), and examine its association with occupation and level of education among polio survivors.

The study was a cross-sectional survey of polio survivors (N = 54) registered with the Post Paralytic Polio Survivors Association, living in Gusau, North Western Nigeria. The World Health Organization (WHO) QOL BREF 26 Items English version was used to assess QOL, while a biodata form was used to assess demographic variables. The data were analyzed using mean and standard deviation, Wilcoxon rank test and Kruskal-Wallis test. The level of significance was set at 0.05.

The mean age of the participants was 22.4 ± 5.4 years and mean QOL scores were 45.2 ± 9.7 , 54.8 ± 11.4 , 41.3 ± 10.9 and 44.4 ± 12.1 in physical, psychological, social relationship and environmental domains, respectively. The participants' overall perception of their QOL and health averaged 3.3 ± 0.8 and 3.6 ± 0.7 , respectively. No significant association was observed between all the domains. Occupation status ($P > 0.05$) and educational level had no significant relationship with all the domains ($P > 0.05$).

The findings of this study suggest that the QOL of polio survivors is not associated with their occupational status and level of education. It was suggested that follow-up research should try to clarify whether improving occupational and education status raises the QOL of polio survivors.

KEY WORDS: Polio, quality of life, survivors

INTRODUCTION

Poliomyelitis is a debilitating viral disease that attacks the brain and ventral horn of the spinal cord (Bohlke et al., 2003). Damage to the lower motor neurons usually results in atrophy and weakness of muscle groups, perhaps paralysis and possibly deformity (Cohen, 2004). Post polio residual paralysis usually occurs after acute poliomyelitis which leads to disability. The polio survivors are one of the largest disabled groups in the world. The World Health Organization (2001) estimates that there are 10 to 20 million polio survivors worldwide. In 1988, polio was endemic in more than 125 countries, paralyzing over 350,000 children every year (WHO, 2010). The World Health Assembly then resolved to eradicate poliomyelitis worldwide, since then the estimated global incidence of polio has decreased by 99% (WHO, 2008).

The economic effects of poliomyelitis can be devastating. Persons living with the effects of polio residual paralysis are often at increased risk of the development of secondary conditions and disabilities that can lead to further decline in health status, independence, functional status, life satisfaction and overall quality of life. Quality of life is considered as the ultimate goal of health interventions (Pain et al., 1998). The rehabilitation of those affected should be holistic and include not only physical but also mental and social rehabilitation and integration into mainstream society. One of the cornerstones for increasing capacity and empowering individuals is through education. Most of these survivors do not go to school because of poverty, lack of resources and low priority for education by family members (Charlotte, 2003). It is therefore imperative that any intervention for the disabled should not be restricted to physical rehabilitation alone,

but also cater for other areas of life like education, livelihood and empowerment. Suggestions for intervention have included disease specific programmes (Halstead, 2006) based on multidisciplinary teams (Kling et al, 2000), psychological (Kemp et al, 1997; Hollingsworth et al, 2002), social support (Stuifbergen, 2005), and health promotion through smoking cessation, weight maintenance, and physical activity (Hofoss, 2004).

Disability due to polio is increasing in Nigeria, resulting in serious economic problems, leading to a reduction in the quality of life, and street begging especially in Northern Nigeria where the incidence of poliomyelitis is still high. Presently in Nigeria, there is no available data on the quality of life of post paralytic polio survivors.

METHODOLOGY

Participants

This study was a cross-sectional survey and the participants (54) were members from the Association of Post Paralytic Polio Survivors living in Gusau Local Government, Zamfara State, North Western Nigeria.

Data collection

The instruments for the data collection included the biodata form and World Health Organization BREF Questionnaire on Quality of Life (WHO BREF QOL). The WHO QOL BREF contains four domains and two additional questions. Question 1 asked about an individual's overall perception of their QOL and question 2 asked about an individual's perception of their health. Domain one (physical health) has seven (7) items, domain two (psychological health) has five (5) items, domain three (social relationships) has three (3) items and domain four (environmental) has eight (8) items. The maximum score for an item is five (5) while minimum score is one (1). The score of items within each domain is used to calculate the domain score. When more than 20% of data is missing from any assessment, the assessment was discarded. The internal consistency (Cronbach alpha) of WHO QOL BREF has been reported to be 0.70 to 0.77 for the four domains (WHO Group, 1996). Content validity coefficients were in a range of 0.51 to 0.64 and 0.51 to 0.64 for inter-domain correlations (Yao et al, 2002). Biodata forms were used to assess information on gender, marital status, age, educational level and occupation.

Data for the present study was obtained through an interview by the researcher. Informed consent was

obtained before the commencement of the study, both from the association and the participants. The participants who were not registered members were excluded from the study. The procedure was explained to the participants before the commencement of the study.

Data treatment

The raw scores of each domain of WHO QOL-BREF were obtained by adding the scores of the items that make up that domain. The raw scores were converted to transformed scores of 100 using the standard given by WHO, except for question one and two which were reported on a five- point scale.

Statistical analysis

The descriptive statistics of mean and standard deviation were used to summarize the age and QOL of the participants. Also, Wilcoxon rank test was used to compare the domain scores of the male and female participants. Kruskal-Wallis test was also used to compare domain scores across three occupational strata and levels of education, while STATA statistical package version 10 was used to analyze the data. Significance was set at 0.05.

Result

Fifty-four (54) post polio individuals with a mean age of 22.4 ± 5.5 years participated in the study. Forty-five (83.3%) were male with a mean age of 21.9 ± 5.4 and 9 (16.7%) were female with a mean age of 25.1 ± 6.7 years. Forty-three (79.6%) were single and 11 (20.4%) were married. Thirty-seven (68.5%) were unemployed, 14 (25.9%) were self employed and 3 (5.6%) were employed by the government. Eleven (20.4%) of the participants never attended school, 26 (48.1%) attended Quranic School, 11 (20.4%) attended primary school, and 6 (11.1%) had post-primary education (table 1).

The mean quality of life score of participants in the overall QOL and overall health items were 3.3 ± 0.8 and 3.6 ± 0.7 , respectively. The participants' highest mean score was in the psychological health domain (54.8 ± 11.4), while their least score was in the social relation domain 41.3 ± 10.9 respectively (table 2). The mean quality of life scores indicated that self employed individuals scored highest in the social relationship domain (57.2 ± 11.4), the government employed scored highest in the physical health domain (48.0 ± 6.9), while the unemployed scored least in all the four domains. No significant differences across all the domain scores for all classes of occupation $P > 0.05$

were recorded (table 3) . Those who never attended school had the highest score in the psychological health domain (57.4 ± 8.8) but had the lowest scores in the environment, social relationship and physical health domains (34.8 ± 8.6 , 36.9 ± 8.8 and 43.3 ± 11.3 , respectively).

Those who attended primary school scored highest in the physical health domain (46.1 ± 7.2), and those with post-primary school education scored highest in the social relationship and environmental domains (54.1 ± 15.8 and 48.0 ± 13.5 , respectively). No significant differences across the educational level $P > 0.05$ (table 4) were recorded.

Table 1. Sociodemographic characteristics of participants

Variable	Frequency distribution
Age (years)	
Male	21.9 \pm 5.1
Female	25.1 \pm 6.7
Gender	
Male	45(83.3%)
Female	9 (16.7%)
Occupation	
Unemployment	37 (68.5%)
Self employment	14 (25.9%)
Employed	3 (5.6%)
Education	
Never attend school	11 (20.4%)
Quranic School	26 (48.2%)
Primary School	11 (20.4%)
Post primary school	6 (11%)
Marital Status	
Single	43 (79.6%)
Married	11(20.4%)

Table 2. Wilcoxon rank test of QOL scores of male and female

QOL Domain	Male(n =45)	Female (n = 9)	All participant (n = 54)	Z score	P v alue
			X \pm S.D		
Physical health	46.0 \pm 8.5	41.0 \pm 14.2	45.2 \pm 9.7	-0.948	0.343
Psychological health	54.1 \pm 1.6	55.6 \pm 10.8	54.8 \pm 11.4	-0.308	0.724
Social relation	41.7 \pm 10.3	39.1 \pm 14.3	41.3 \pm 10.9	-0.636	0.524
Environmental	44.6 \pm 11.5	43.5 \pm 15.1	44.4 \pm 12.1	-0.495	0.624
Overall QOL (single term)	3.3 \pm 0.8	3.4 \pm 0.7	3.3 \pm 0.8	-0.051	0.959
Overall health (single term)	3.6 \pm 0.7	3.6 \pm 1	3.6 \pm 0.7	-0.063	0.949

Table 3. Kruskal-Wallis test comparing QOL scores of participants with different occupation

Domains	Occupation	n	Mean	Chi-square	P -value
			X ± S.D.		
Physical health	Unemployed	37	4.5 ± 9.7	0.5107	0.775
	Self employed	14	45.2 ± 10.6		
	Government employed	3	48.0 ± 6.9		
Psychological health	Unemployed	37	42.3 ± 12.2	0.9914	0.609
	Self employed	14	50.5 ± 9.7		
	Government employed	3	41.6 ± 14.4		
Social relationship	Unemployed	37	54.0 ± 11.4	0.0629	0.969
	Self employed	14	57.2 ± 11.4		
	Government employed	3	41.6 ± 13.0		
Environmental	Unemployed	37	41.5 ± 11.9	3.425	0.18
	Self employed	14	39.8 ± 9.5		
	Government employed	3	46.6 ± 3.4		
Overall QOL	Unemployed	37	3.2 ± 0.8	1.3697	0.504
	Self employed	14	3.5 ± 0.6		
	Government employed	3	3.3 ± 0.5		
Overall health	Unemployed	37	3.6 ± 0.8	0.3933	0.821
	Self employed	14	3.7 ± 0.7		
	Government employed	3	4.3 ± 0.5		

Table 4. Kruskal-Wallis test comparison of QOL score of participants with educational level

Domains	Education	n	Mean	Chi-square	P -value
			X ± S.D.		
Physical health	Never attended school	11	43.3 ± 11.3	2.475	0.48
	Quranic school	26	45.4 ± 10.6		
	Primary school	11	46.1 ± 7.2		
	Post primary school	6	46.0 ± 8.1		
Psychological health	Never attended school	11	57.4 ± 8.8	1.6386	0.651
	Quranic school	26	54.0 ± 11.9		
	Primary school	11	54.6 ± 12.1		
	Post primary school	6	54.3 ± 14.0		
Social relationship	Never attended school	11	36.9 ± 9.6	3.2099	0.36
	Quranic school	26	43.7 ± 9.9		
	Primary school	11	48.2 ± 13.2		
	Post primary school	6	54.1 ± 15.8		
Environmental	Never attended school	11	34.8 ± 8.6	1.3839	0.709
	Quranic school	26	41.2 ± 10.6		
	Primary school	11	44.4 ± 10.3		
	Post primary school	6	48.0 ± 13.5		
Overall QOL	Never attended school	11261	3.1 ± 0.6	3.0782	0.38
	Quranic school	16	3.3 ± 0.8		
	Primary school		3.7 ± 0.6		
	Post primary school		3.0 ± 0.1		
Overall health	Never attended school	11	3.1 ± 0.6	5.2543	0.154
	Quranic school	26	3.7 ± 0.9		
	Primary school	11	3.85 ± 0.6		
	Post primary school	6	4.1 ± 0.4		

DISCUSSION

The study investigated the health-related Quality of life (QOL) of post paralytic polio survivors in Zamfara State, North Western Nigeria. Fifty-four (54) subjects participated in the research. The mean age of the respondents showed that subjects in the study were younger when compared with previous studies on QOL. Jacob and Shapira (2010) and Saeki and Hachisuka (2006) reported 45-65 years and 55.2 ± 8.4 years, respectively. This may be due to the fact that polio had been eradicated over a decade ago in Israel and Japan where those studies were carried out. In Nigeria, especially where the research was carried out (northern Nigeria), fresh polio cases were still being reported among children.

Jacob and Shapira (2010) reported similar results in the psychological and physical domains (32.9 and 50.3, respectively), while Saeki and Hachisuka (2006) reported 43.0 and 52.2, respectively.

Quality of life and gender

The scores of male and female subjects did not differ significantly in all the domains. These findings are similar to that of Saeki and Hachisuka (2006), who reported no significant gender difference. However, male subjects scored higher than females in the physical health, social relationship and environmental domains.

Quality of life and occupational status

The quality of life of the participants did not differ significantly across the occupational categories; but the results showed that individuals who were government employed or self employed scored higher in all the four domains when compared with their unemployed counterparts who scored low in all the four domains. Previous studies by Harrison and Stuijbergen (2006) reported higher QOL in subjects with support from families and those who are employed.

Quality of life and level of education

The QOL scores of participants did not differ significantly across the education, physical health, psychological health, social relationship and environmental domains. However, the result shows that those who attended any of Quranic, primary and post-primary schools scored higher in physical health, social relationship, overall QOL and overall health. Those who never attended schools scored higher in only psychological health. The previous studies did not compare levels of education, and this may be because disability is

not a barrier to education in developed countries where most of the studies were carried out.

The analyses of domain scores showed that gender, occupational status and level of education did not significantly influence their QOL. It was suggested that a follow-up research should aim to clarify whether improving occupational and education status will raise the QOL of polio survivors.

Acknowledgements

We wish to thank the Post Paralytic Polio Survivors Association of Gusau Local Government, Zamfara State, Nigeria, for their cooperation and understanding during the data collection, and the subjects who participated in the study.

References

- Bohlke, K., Davis R.L. and Marcy S.H. 2003. Risk of anaphylaxis after vaccination of children and adolescents. *Pediatrics* 112: 815–20.
- Charlotte, M. 2003. Youth migration and poverty in sub-Saharan Africa: Empowering the rural youth. Topical Review Digest: Human Rights in Sub-Saharan Africa. Accessed from: [www.tl.undp.org/pdf/11 am 19 /12/2010](http://www.tl.undp.org/pdf/11%20am%2019%2012/2010).
- Cohen, J.I. 2004. Enteroviruses and retroviruses. In Kasper DL, E. Braunwald and A.S. Fauci. 2004. *Harrison's principles of internal medicine* (16th edition). Mc Graw-Hill. pp 1144-46.
- Halstead, L.S. 2006. New health problems in persons with polio. In: Halstead, L.S. (editor). *Managing post polio. A guide to living and aging well with post polio syndrome*. St Petersburg, FL: ABI Professional Publication. p. 20–53.
- Harrison, T.C. and Stuijbergen A.K. 2006. Life purpose: effect on functional decline and QoL in polio-survivors. *Journal of Rehabilitation Nursing* 31:149–154.
- Hofoss, D. 2004. Healthy living does not reduce life satisfaction among physically handicapped persons. *Patient Education and Counseling* 52: 17–22.
- Hollingsworth, L., Didelot M.J. and Levington C.. 2002. Post polio syndrome: Psychological adjustment to disability. *Mental Health Nursing* 23: 135–156.
- Jacob, T. and Shapira A. 2010. Quality of life and health conditions reported from two post polio clinics in Israel. *Journal of Rehabilitation Medicine* 42: 377-379.
- Kemp, B.J., Adams B.M., and Campbell M. 1997. Depression and life satisfaction in aging polio survivors versus age-matched controls: Relation to post polio syndrome, family functioning, and attitude toward disability. *Archives of Physical Medicine and Rehabilitation* 78: 187–192.
- Kling, C., Persson A. and Gardulf A. 2000. The health-related QOL of patients suffering from the late effects of polio (PP). *Journal of Advanced Nursing* 32: 164–173.

- Pain, K., Dunn M., Anderson G., Darrah J. and Kratochvl M. 1998. Quality of life what does it mean in rehabilitation? *Journal of Rehabilitation* 64: 5-11.
- Rekand, T., Korv J., Farbu E., Roose M., Gilhus N.E. and Langeland N. 2004. Lifestyle and late effects after poliomyelitis. A risk factor study of two populations. *Acta Neurologica Scandinavica* 109: 120–125.
- Saeki, S. and Hachisuka K. 2006. Factors associated with QOL of polio survivors in Japan. *Japanese Journal of Occupational Medicine and Traumatology* 54: 84 –90.
- Salter, K.L., Jutia J.W., Teasell R., Foley N.C., Bitensky J. and Bayley M. 2005. Issues for selection of outcome measures in stoke rehabilitation: ICF activity. *Disability Rehabilitation* 27: 507-528.
- Stuifbergen, A.K. 2005. Secondary conditions and life satisfaction among polio survivors. *Journal of Rehabilitation Nursing* 30: 173–179.
- World Health Organization. 2001. International classification of functioning, disability and health (ICF). Accessed from www.int/icf/onlinebrowser/icf.cfm?parentlevel-2&childlevel. Accessed on 22/1/07 11:25am.
- World Health Organization Group. 1996. Introduction, administration, scoring and generic version of assessment programme on mental health. www.who.int/mentalhealth/media/in/76.pdf accessed on 05/07/2010.
- World Health Organization. 2008. Poliomyelitis. <http://www.WHOpoliomyelitis.org>. Accessed online 05/05/2010.10:40pm
- World Health Organization (2010). Wild polio virus weekly update 4 May, 20 <http://www.who.int/weeklyepid.org> 2/04/2010 12am.
- Yagi, Z.A., Oncu J., Atanaz F. and Durmaz B. 2006. Impact of post polio related fatigue on quality of life. *Journal of Rehabilitation Medicine* 30: 329 – 332.
- Yao, G.R., Chung W., Yu G.F. and Wang J.O. 2002. Development and verification of validity and reliability of WHO QOL-BREF Taiwan Version. *Journal of Formosan Medical Association* 101(5); 342-357.