

Influence of Occupational Status on the Quality of Life of Chinese Adult Patients with Epilepsy

Xiang-Min Gu¹, Cheng-Yun Ding², Ning Wang³, Cheng-Feng Xu³, Ze-Jie Chen², Qin Wang³, Qin Yao³, Fu-Li Wang³

¹Department of Epilepsy, Graduate Training Base of Jinzhou Medical University, First Affiliated Hospital of Chinese People's Liberation Army General Hospital, Beijing 100048, China

²Department of Epilepsy, First Affiliated Hospital, General Hospital of People's Liberation Army, Beijing 100048, China

³Department of Hospital Management, First Affiliated Hospital, General Hospital of People's Liberation Army, Beijing 100048, China

Abstract

Background: Epilepsy is one of the most common serious neurological disorders. The present study aimed to investigate the influence of occupational status on the quality of life of Chinese adult patients with epilepsy.

Methods: This study surveyed 819 subjects clinically diagnosed with epilepsy for more than 1 year in 11 hospitals in Beijing; 586 were employed (71.55%). All subjects completed the case report form with inquiries on demographic data, social factors, and illness. The patients' quality of life was assessed using the quality of life in patients with epilepsy-31 items (QOLIE-31) questionnaire.

Results: The QOLIE-31 score in the employed group was significantly higher than that in the unemployed group. Furthermore, the scores in all the sections (overall quality of life, energy/fatigue, emotional well-being, seizure worry, cognition, social function, and medication effects) of the employed group were higher than those of the unemployed group. Both the employed and unemployed groups achieved the highest difference in social function. The QOLIE-31 score of students was higher than those of farmers and workers. Both the students and workers scored higher in the quality of life compared with the adult peasants living with epilepsy. The students and farmers showed significant differences in QOLIE-31 score, cognition, emotional well-being, overall quality of life, energy/fatigue, and social function. In contrast, no significant difference was noted in seizure worry and medication effects across the three different kinds of occupation.

Conclusion: Occupational status might affect the quality of life of Chinese adult patients with epilepsy, and social function is the most important contributing factor.

Key words: Adults; Epilepsy; Occupational Status; Quality of Life

INTRODUCTION

Epilepsy is one of the most common serious neurological disorders. It is a highly preventable noncommunicable disease.^[1,2] Persons with epilepsy, even those with well-controlled seizures, may face emotional distress, low self-esteem, reduced social interactions, decreased job opportunities, and problems with daily activities.^[3,4] A growing body of evidence implicates the socioeconomic status as a risk factor for epilepsy in adults.^[5] In particular, occupation is the embodiment of social status and economic level. The improvement in the quality of life of patients with epilepsy is now widely accepted as a highly important therapeutic goal. Quality of life has been defined by the World Health Organization as a reference to a person's well-being and the individual's perception of their position in life.^[6] However, studies on adults with epilepsy in China and abroad seldom focus on the effect of occupational status on

the patients' quality of life. This study attempted to explore the effects of occupational status on the quality of life. It aimed to provide an objective basis for the possible relationship between occupational status and the quality of life of patients with epilepsy.

METHODS

A total of 11 professional epilepsy centers or neurological

Address for correspondence: Dr. Fu-Li Wang,
Department of Hospital Management, First Affiliated Hospital,
General Hospital of People's Liberation Army, Beijing 100048, China
E-Mail: wangfuli304@126.com

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clinics were randomly selected at Beijing. Patients diagnosed with epilepsy were recruited from the neurology departments of these hospitals. The inclusion criteria were as follows: (1) diagnosis of epilepsy based on the 2014 International League Against Epilepsy for more than 1 year, (2) age 18–65 years, (3) educational attainment higher than primary school, and (4) signed informed consent. Meanwhile, the exclusion criteria were as follows: (1) progression of central nervous system (CNS) disease or acute stage and other severe chronic CNS diseases; (2) disturbance of consciousness, cognitive impairment, and language dysfunction; (3) seizure occurrence of more than once within 72 h of screening; (5) history of schizophrenia; (6) history of cranial surgery; and (7) history of drug abuse.

The term “occupation” is defined by Webster’s New International Dictionary as follows:

1. Fixed occupation: Fixed occupation refers to work with stable compensation, complete insurance provisions, and several government benefits
2. Free occupation: A person with a free occupation works independently of any organization. Some individuals engage in free occupations as their long-term careers
3. Peasantry: This occupation refers to the long-term involvement in agricultural production (i.e., occupations of nomads, fishermen, and farmers)
4. Student (≥ 18 years old): Students receive university education and are not completely integrated into the workforce
5. Worker: Manual and mental workers are individuals employed in enterprises, institutions, and organizations, who receive wages as their main source of income.

On the basis of the inclusion and exclusion criteria, qualified investigators surveyed 819 adults with epilepsy diagnosed in the neurology departments of 11 public hospitals in Beijing. The Quality of Life in Epilepsy-31 (QOLIE-31)^[7,8] is a health-related quality of life survey for adults (>18 years) with epilepsy. Derived from the QOLIE-89, this scale contains domains that include seven subscales: overall quality of life, seizure worry, emotional well-being, cognitive function, energy/fatigue, medication effects, and social function. The responses can yield seven individual scores (per subtest) and a total (composite) score. The raw scores are then rescaled from 0 to 100, with higher values indicating better QOLIE-31 scores. The survey was conducted by trained researchers on adult patients with epilepsy; the questionnaire contained questions on patient-related information and the QOLIE-31 scale (Chinese version).^[9]

Statistical analysis

Data were inputted using EpiData 3.0 (The EpiData Association, Odense Denmark, 2003) and analyzed using SPSS 17.0 (IBM, Chicago, IL, USA). The two sample means were compared using a *t*-test (or rank-sum test). Qualitative data were analyzed using a Chi-square test. Three sets of measurement data were compared using analysis of variance (ANOVA, or rank-sum test), and multiple comparisons were conducted using Bonferroni correction. A value of $P \leq 0.05$ was considered statistically significant.

According to a previous study conducted by de Boer, the employed patients with epilepsy were 44%.^[10] A simple sampling method was used in this study. Assuming a similar rate for the employed patients with epilepsy, a minimum of 460 patients should be recruited to achieve a two-tailed 95% significance level and 15% loss rate of a questionnaire.

RESULTS

On the basis of the inclusion and exclusion criteria, 819 adult patients with epilepsy were enrolled in the present study. Among these subjects, 513 were males (62.14%), whereas 306 were females (37.86%). The average age was 33.22 ± 12.13 years (18–65 years). A total of 546 individuals (77.28%) held educational attainments of high school diploma and higher. Meanwhile, 353 subjects (43.10%) received an average household income of $\geq \text{¥}5000$ per month over the past year. A total of 437 patients were married (53.35%).

A total of 726 subjects (88.64%) received specialist medical treatment, and 603 patients (73.62%) experienced seizures over the past year. The average age at which the patients suffered their first seizure episode was 19.49 ± 13.04 years (1–63 years). The mean disease duration was 13.82 ± 12.44 years (0–61 years). A total of 346 patients (65.78%) reported good compliance with epilepsy medication.

Table 1: Comparison of demographic and disease data between the employed and unemployed adult patients with epilepsy ($n = 819$)

Variable	Employed ($n = 586$)	Unemployed ($n = 233$)	<i>P</i>
Sex, <i>n</i> (%)			
Male	370 (72.69)	139 (27.31)	0.860
Female	216 (69.67)	94 (30.33)	
Age, mean \pm SD, years	33.44 ± 12.52	33.00 ± 11.09	0.842
Education, <i>n</i> (%)			
Under high school	150 (54.94)	123 (45.06)	0.000
High school or higher	436 (79.85)	110 (20.15)	
Average monthly income (¥), <i>n</i> (%)			
<5000	291 (62.72)	173 (37.28)	0.000
≥ 5000	305 (85.92)	50 (14.08)	
Marital status, <i>n</i> (%)			
Unmarried	274 (71.73)	108 (28.27)	0.530
Married	322 (73.68)	115 (26.32)	
Diagnosis, <i>n</i> (%)			
Special medication	622 (85.67)	104 (14.33)	0.000
General medication	64 (68.82)	29 (31.18)	
Age of onset, mean \pm SD, years	20.49 ± 13.16	16.98 ± 12.41	0.000
Course, mean \pm SD, months	12.96 ± 12.49	15.99 ± 12.06	0.000
Seizure in 1 year, <i>n</i> (%)			
Yes	427 (70.81)	176 (29.19)	0.482
No	159 (73.61)	57 (26.39)	
Medication compliance, <i>n</i> (%)			
Yes	346 (65.78)	180 (34.22)	0.278
No	204 (69.62)	89 (30.38)	

QOLIE-31: Quality of Life in Epilepsy-31; SD: Standard deviation.

The number of employed subjects with high school and/or higher education (79.85%) were greater than the number of unemployed subjects (20.15%). Furthermore, the majority of patients with income \geq ¥5000 per month were employed (85.92%), and the difference between the employed and unemployed patients was statistically significant ($P < 0.05$). No significant differences in gender, age, and marital status were observed between the employed and unemployed subjects ($P > 0.05$).

Most of the patients who received specialist treatment were employed (85.67%). The age at a first seizure episode was higher in the patients with occupation (20.49 ± 13.16 years) than in those without occupation (16.98 ± 12.41 years). The duration of disease was also significantly shorter in the employed (12.96 ± 12.49 years) than in the unemployed patients (15.99 ± 12.06 years) ($P < 0.01$). In contrast, no significant difference in the occupational status was observed between the patients who experienced seizure attacks over the year and those who did not, as well as those with varying degrees of compliance ($P > 0.05$) [Table 1].

The scores of the employed adult patients with epilepsy on overall quality of life, energy/fatigue, emotional well-being, seizure worry, cognition, social function, medication effects, and QOLIE-31 were higher than the scores of the unemployed patients [Table 2].

On comparing the differences in scores between employed and unemployed patients for each factor on the quality of life, the highest discrepancy was noted in social function, followed by cognition and energy/fatigue. The lowest difference was observed in the overall quality of life [Table 3]. The adult patients with epilepsy were classified into two groups on the basis of the occupational type as follows: fixed occupation (466 patients) and freelance occupation (70 patients). No significant disparity in the overall quality of life and related factors was found between the patients in fixed and freelance occupations ($P > 0.05$) [Table 4]. The adult patients with epilepsy in occupations as student and worker attained significantly higher QOLIE-31 scores (68.04 ± 14.01 and 63.95 ± 14.52 , respectively) than those as a peasant (56.26 ± 14.04) ($P < 0.05$) [Table 5]. Table 6 shows that the patients with occupations as student and peasant significantly differed in QOLIE-31 score, cognition, emotional well-being, overall quality of life, social function, and presence of energy/fatigue. In contrast, the patients with the three occupations showed no significant difference in seizure worry and medication effects [Table 6].

DISCUSSION

Occupational status might reflect income, social status, and social prestige; hence, it is a highly important factor related to socioeconomic status. Rakesh *et al.* conducted a cross-sectional study of epilepsy patients in rural Southern India. The group found that lack of education, single marital status, divorce or deceased spouse, increasing age, and low *per capita* income can reduce the quality

Table 2: Comparison of the quality of life between employed and unemployed adult patients with epilepsy

Items	Unemployed (n = 586)	Employed (n = 233)	Total population (n=819)
Overall quality of life	29.87 \pm 11.61	35.98 \pm 9.98*	34.24 \pm 10.82
Energy/fatigue	57.00 \pm 21.39	67.65 \pm 19.14*	64.62 \pm 20.37
Emotional well-being	60.86 \pm 19.10	68.61 \pm 17.65*	66.40 \pm 18.40
Seizure worry	44.90 \pm 27.31	53.18 \pm 24.77*	50.83 \pm 25.77
Cognition	58.43 \pm 21.87	69.67 \pm 18.97*	66.47 \pm 20.46
Social function	59.63 \pm 24.91	72.15 \pm 21.42*	68.59 \pm 23.16
Medication effects	46.26 \pm 26.64	55.02 \pm 25.63*	52.53 \pm 26.21
QOLIE-31	53.43 \pm 16.55	63.31 \pm 14.73*	60.50 \pm 15.90

Values are expressed as the mean \pm standard deviation. *With statistically significant difference between employed and unemployed patients; $P < 0.01$. QOLIE-31: Quality of Life in Epilepsy-31.

Table 3: Differences in quality of life and related factors between employed and unemployed adult patients with epilepsy

Variable	Difference	95% CI	P
Social-function	11.231	7.67, 14.79	0.000
Cognition	9.810	6.68, 12.94	0.001
Energy/fatigue	9.476	6.37, 12.58	0.001
QOLIE-31	8.828	6.43, 11.23	0.000
Medication effects	7.791	3.73, 11.85	0.001
Seizure worry	7.544	3.53, 11.55	0.000
Emotional well-being	6.841	3.99, 9.69	0.001
Overall quality of life	5.863	4.23, 7.49	0.000

CI: Confidence interval; QOLIE-31: Quality of Life in Epilepsy-31.

Table 4: Comparison of the overall quality of life and related factors between adult patients with epilepsy in fixed and freelance occupations

Items	Fixed occupation (n = 466)	Freelance occupation (n = 70)
Overall quality of life	35.75 \pm 9.66	35.08 \pm 13.38
Energy/fatigue	66.49 \pm 18.84	65.77 \pm 23.62
Emotional well-being	67.67 \pm 17.82	68.92 \pm 15.59
Seizure worry	52.31 \pm 24.55	57.05 \pm 29.38
Cognition	68.20 \pm 19.01	69.55 \pm 18.29
Social function	70.80 \pm 21.42	73.23 \pm 25.57
Medication effects	54.19 \pm 25.11	48.93 \pm 37.67
QOLIE-31	62.23 \pm 14.67	63.33 \pm 15.86

Values are expressed as the mean \pm standard deviation. QOLIE-31: Quality of Life in Epilepsy-31.

of life in patients with epilepsy.^[11] People with epilepsy can suffer from difficulties in social interactions, which, though not always readily apparent, may significantly impact their social function and ability to form quality social relationships and networks.^[12] Socioeconomic status and occupation occasionally carry a significantly increased risk of hospitalization for patients with epilepsy.^[13] The present results showed no significant difference in gender, age, marital status, seizure occurrence for the past year, and degrees of medication adherence ($P > 0.05$) among

patients in different occupations. In contrast, patients in different occupations significantly differed in level of education, income, type of diagnosis, treatment, age at first onset, and disease course ($P < 0.05$). Different kinds of occupations receive different incomes and consequently, afford different treatments, resulting in the disparity in the quality of life.

Employed adult patients with epilepsy scored higher in QOLIE-31, overall quality of life, energy/fatigue, emotional well-being, seizure worry, cognition, social function, and medication effects than the unemployed patients. Hence,

adult patients with epilepsy entering occupations can achieve positive benefits. The occupational status reflects the socioeconomic status. Low socioeconomic status is a risk factor for the development of epilepsy.^[14] Low socioeconomic status is associated with risk factors such as infection and poor nutrition, thereby worsening the quality of life. However, the effect of employment varies for each factor and the overall quality of life. Through analysis, the difference between the employed and unemployed patients was found to be higher in social function, cognition, and energy/fatigue than in the other factors. Social functioning, however, is a key aspect in the quality of life and it is frequently referenced that social connections and networks in both professional work and personal relationships are the single most important factor and predictor of well-being, happiness, and life satisfaction.^[15,16] Some studies showed that higher educational levels are related to better scores on the social function subscale.^[9] Patients with epilepsy might feel unsafe, uncomfortable, anxious, and disappointed, which can cause problems for them in relation to their peers and reduce their social relations, which is a problem for many persons with epilepsy.^[17] Employment can provide satisfaction and communication opportunities, which can significantly improve social function, individual cognition, and energy. By participating in special employment programs, people with epilepsy can be guided toward the labor market, thus improving the quality of their lives.^[18] Hence, adult patients with epilepsy should be actively

Table 5: Comparison of the overall quality of life and related factors between patients with epilepsy in different occupations

Items	Student (n = 107)	Peasant (n = 101)	Worker (n = 346)
Overall quality of life	37.05 ± 10.88	32.36 ± 9.10	36.73 ± 9.82
Energy/fatigue	72.89 ± 19.15	58.41 ± 18.62	68.50 ± 18.02
Emotional well-being	72.67 ± 16.72	62.09 ± 17.79	69.27 ± 17.81
Seizure worry	56.52 ± 25.02	49.34 ± 22.03	53.55 ± 25.27
Cognition	76.09 ± 17.66	60.24 ± 19.03	70.56 ± 18.54
Social function	77.89 ± 20.13	64.26 ± 20.33	72.72 ± 21.04
Medication effects	59.39 ± 25.91	56.57 ± 25.04	53.41 ± 25.69
QOLIE-31	68.04 ± 14.01	56.26 ± 14.04	63.95 ± 14.52

Values are expressed as the mean ± standard deviation. QOLIE-31: Quality of Life in Epilepsy-31.

Table 6: Diversity factor analysis on the variation in the QOLIE-31 score of the patients with epilepsy in different special occupations

Variable	Comparison	Difference	95% CI	P
QOLIE-31	Student versus peasantry	11.781	7.01, 16.56	0.000
	Worker versus peasantry	7.702	3.77, 11.63	0.000
	Student versus employee	4.079	0.24, 7.92	0.033
Cognition	Worker versus peasantry	15.845	9.69, 22.00	0.000
	Worker versus peasantry	10.318	5.26, 15.38	0.000
	Student versus worker	5.528	0.58, 10.48	0.023
Emotional well-being	Student versus peasantry	10.574	4.71, 16.43	0.000
	Worker versus peasantry	7.176	2.35, 12.00	0.001
	Student versus worker	3.398	-1.32, 8.12	0.253
Energy/fatigue	Student versus peasantry	14.481	8.36, 20.60	0.000
	Worker versus peasantry	10.084	5.05, 15.12	0.000
	Student versus worker	4.397	-0.53, 9.32	0.098
Medication effects	Student versus worker	5.986	-0.88, 12.86	0.111
	Peasantry versus worker	3.162	-3.86, 10.18	0.840
	Student versus peasantry	2.825	5.71, 11.36	0.999
Overall quality of life	Student versus peasantry	4.700	1.40, 8.00	0.002
	Worker versus peasantry	4.372	1.65, 7.09	0.000
	Student versus worker	0.328	-2.33, 2.99	0.999
Social-function	Student versus peasantry	13.630	6.72, 20.53	0.000
	Worker versus peasantry	8.458	2.78, 14.14	0.001
	Student versus worker	5.172	-0.39, 10.73	0.078
Seizure worry	Student versus peasantry	7.177	-1.03, 15.39	0.109
	Worker versus peasantry	4.211	-2.54, 10.97	0.405
	Student versus worker	2.966	-3.64, 9.58	0.845

QOLIE-31: Quality of Life in Epilepsy-31; CI: Confidence interval.

encouraged to seek job opportunities and not dwell on anxiety, fear, and inferiority.

As previously discussed, no difference in the quality of life was noted in the patients with fixed and freelance occupations. Freelance occupations are relatively new compared with traditional jobs, but most freelance occupations resemble fixed occupations in many aspects such as salary, social status, and educational background. Therefore, adult patients with epilepsy might still attain positive benefits from employment, regardless of whether fixed or freelance work is involved.

Three different kinds of occupations were assessed in terms of their effect on the quality of life of adult patients with epilepsy. The three different groups belong to different social classes and present varying economic statuses and education levels. According to the analysis, economic status and educational level were the two largest independent risk factors that affected the QOLIE-31 score of the adult patients with epilepsy. In a previous study, economic status was found to obviously influence the QOLIE-89 total and subscale scores; higher economic statuses were noted to correlate with higher QOLIE-89 total scores.^[19] In the present study, the students and farmers differed in the QOLIE-31 scores, emotional well-being, overall quality of life, social function, and maximum energy. In contrast, the two groups did not significantly differ in seizure worry and drug compliance. This finding might be attributed to the lack of involvement of other occupations, which might have affected the results.

In this study, the quality of life of adult patients with epilepsy was probably found to be associated with occupation. Unemployment and long-term sick leave might lead to loss of social connections and isolation, causing depression and anxiety. Psychic and emotional distress may decrease the probability of returning to work, causing a vicious circle.^[20] The overall quality of life of employed patients is higher than that of unemployed patients. Meanwhile, the influence of different kinds of occupations varies among different factors related to the quality of life. However, the present study was a cross-sectional study with no follow-up for the quality of life of Chinese adult patients with epilepsy. Adult patients with epilepsy should actively seek a job to concurrently achieve a significant enhancement in their quality of life.

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Conflicts of interest

There are no conflicts of interest.

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