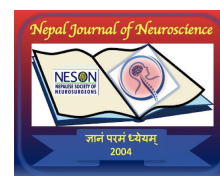


Quality of Life in Individuals with Primary Headache Disorders: A Cross-Sectional Analysis at Tribhuvan University Teaching Hospital

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Abstract

Introduction: Headache disorders are among the most common health conditions worldwide, with a significant global burden, particularly from primary headaches such as migraine and tension-type headache (TTH). In Nepal, the prevalence of headache disorders is high, with a considerable portion of the population affected by these conditions. Primary headache disorders have been shown to negatively impact the quality of life (QoL) of individuals, both physically and mentally.

This study aimed to assess the quality of life in patients diagnosed with primary headache disorders, including migraine, TTH, and other related conditions, at the Tribhuvan University Teaching Hospital in Nepal.

Materials and Methods: An observational descriptive cross-sectional study design was used, with a sample size of 211 patients diagnosed with primary headache disorders. Participants were selected using a non-probability convenience sampling method. A structured questionnaire was administered to collect demographic, clinical, and QoL-related data. The Quality of Life was measured using the Short Form (SF-36) questionnaire, which provides two key summary measures: the Physical Component Summary (PCS) and Mental Component Summary (MCS). Data was analyzed using SPSS Version 29, employing descriptive statistics, independent t-tests, ANOVA, and multiple linear regression to identify associations and predictors of QoL.

Results: Preliminary results indicate that primary headache disorders significantly impair both the physical and mental health of affected individuals, as evidenced by lower PCS and MCS scores. Factors such as age, duration of illness, type of headache disorder, and medication use were identified as key determinants influencing the quality of life in these patients.

Conclusion: The findings of this study highlight the substantial impact of primary headache disorders on the quality of life of individuals. Understanding the factors that contribute to the reduced QoL in these patients is crucial for developing effective interventions and improving the management of primary headache disorders in Nepal.

Keywords: Primary headache disorders, Quality of life, Migraine, Short Form (SF-36) questionnaire

Introduction

Headache disorders are among the most prevalent health conditions globally, affecting nearly half of the adult population.¹ These disorders are complex and heterogeneous, with diverse underlying causes. According to the International

Classification of Headache Disorders (ICHD-3), headaches are classified into primary disorders, which occur without an identifiable cause, and secondary disorders, which are linked to specific underlying conditions². Primary headaches include migraines, tension-type headache (TTH), cluster headaches, and other types. In Nepal, the prevalence of headache disorders is notably high, with 85.4% of the population affected. Among these, TTH affects 41.1% and migraine affects 34.1% of individuals^{3,4}.

The World Health Organization (WHO) defines Quality of Life (QoL) as "an individual's perception of their position in life within the context of the culture and value systems they live in, in relation to their goals."⁵ According to the Global Burden of Disease (GBD) 2015 report, headache disorders contribute to more disability-adjusted life years (DALYs) than all other neurological disorders combined, despite the fact that headaches themselves do not directly affect mortality⁶. The Global Burden of Disease 2024 report highlights migraine as the leading cause of DALYs among individuals aged 5-20 years and points to a growing burden of primary headache disorders due to the increasing Years Lived with Disability (YLDs)⁷.

Previous studies have consistently shown that primary

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headache disorders significantly reduce the quality of life of affected individuals, contributing to a substantial disease burden^{8,9,10}. In this study, we used the Short Form 36 (SF-36) questionnaire to assess QoL. This tool provides two key summary measures: the Physical Component Summary (PCS) and the Mental Component Summary (MCS), which capture the impact of primary headache disorders on both physical and mental well-being^{11,12}.

Material and Method

Study Design

An observational descriptive cross-sectional study design was employed to assess the quality of life (QoL) in patients with primary headache disorders.

Sample Population

The study included patients diagnosed with primary headache disorders who were over the age of 18 and attended Tribhuvan University Teaching Hospital. Exclusion criteria included individuals with other significant illnesses, pregnant women, and those who were unable to understand the Nepali language. The sample size was calculated to be 211 participants, with a 95% confidence interval. Participants were selected using a non-probability convenience sampling method. Due to limitation of sample size there may be a potential bias.

Data Collection

Patients were asked to complete a structured questionnaire. The questionnaire consisted of two sections:

Demographic and Clinical Information: This section gathered data on the participants' background and clinical characteristics such as frequency, severity, medication use etc.

Quality of Life (QoL): The second section contained 36 questions related to QoL, based on a standardized tool provided by Quality Metric. Scoring was performed using the software integrated into the tool.

The Physical Component Summary (PCS) and Mental Component Summary (MCS) were the two primary measures used to evaluate participants' QoL.

The calculation of PCS and MCS scores was carried out using the Pro Core Quality Metric Software Version.

Data Analysis

The collected data were entered into the Pro Core Quality Metric Software for the calculation of MCS and PCS scores. Data entry, editing, cleaning, and analysis were performed using SPSS Version²⁹.

Descriptive statistics were used to summarize demographic and clinical characteristics.

Independent t-tests were conducted to examine associations between sex and education level.

ANOVA tests were applied to investigate associations with duration of illness, diagnosis, age, and medication use.

Multiple linear regression was used to identify predictors of QoL.

A p-value of <0.05 was considered statistically significant, and a 95% confidence interval was applied.

Result

Sample characteristics

The sample characteristics were described in terms of age, sex, and education level for socio-demographic characters and diagnosis, duration of disease, and medications used for clinical characteristics.

Majority of the patients were female (73.6%) and the mean age was 36.4 years (+_ 14.3 years) ranging from 15 years to 87 years. 80.2% of the participants had received formal education.

The majority of the patients attending the OPD of the hospital had symptoms less than 6 months (45.3%) followed by a duration between 1 to 5 years (32.1%). Over half of the patients were diagnosed with Migraine headache (56.6%) and most of the patients were on some form of medications (87.3%) ranging from single up to 4 drugs.

Quality of Life

The mean PCS was 42.08 ranging from 28.57 to 59.60 whereas the MCS was 42.45 ranging from 16.63 to 60.85.

Association of sample characteristics with QoL

Table 1: summarizes the association of PCS score with sociodemographic characteristics. No significant association was found between PCS and sociodemographic characteristics.

Variable	Num ber	Mean Score	Stan- dard error	T e s t a - tistics value	p- value	95% CI
Age				1.542	0.205	
0-20	16	44.30	1.30			40.959 47.637
20-40	118	42.51	0.65			41.277 43.736
40-60	65	40.77	0.78			39.110 42.424
60-100	13	42.05	2.23			38.344 45.753
Sex				1.524	0.129	-3.692-0.472
Male	56	43.26	0.86			
Female	156	41.66	0.55			
E d u c a - tion				2.738	0.007	0.885-5.435
Educated	170	42.71	0.54			
Uneducated	42	39.55	0.82			

Table 2 Shows the association of PCS score with clinical characteristics. Significant association of PCS was found with the number of drugs taken ($p=0.021$) and number of tablets consumed ($p=0.045$). There was no association observed with the PCS score and the type of headache and duration of headache.

Variable	Number	Mean score	Standard error	Test statistics value	p-value	95% CI
Diagnosis				2.334	0.057	
Migraine	120	41.92	0.61			40.711-43.128
Tension type headache	49	40.60	0.90			38.704-42.487
Mixed headache	28	43.59	1.52			41.085-46.090
Chronic daily headache	11	46.80	1.62			42.810-50.795
Cluster headache	4	41.56	3.20			34.939-48.181
Duration				0.188	0.905	
Less than 6 months	96	42.06	0.69			40.686-43.439
6 months to 1 year	36	41.56	1.27			39.310-43.806
1 year to 5 years	68	42.18	0.72			40.544-43.815
More than 5 years	12	43.23	2.81			39.336-47.122
Number of drugs				2.962	0.021	
0	27	44.19	1.20			41.660 46.727
1	59	39.36	0.98			37.071 41.654
2	74	41.57	0.70			40.077 43.059
3	40	42.67	0.94			41.025 44.316
4	8	45.56	2.74			41.401 49.727
Number of tablets				2.488	0.045	
0	27	44.19	1.20			41.643 46.743
1	70	40.62	0.82			39.041 42.208
2	63	41.60	0.78			39.927 43.265
3	43	43.19	1.05			41.167 45.208
4	8	45.84	3.47			41.154 50.523

Table 3: Demonstrates the association of MCS with sociodemographic characteristics. Our study found significant association between MCS and age ($p=0.001$). Those under the age of 20 years reported the worst MCS scores followed by age 40-60 years. People over 60 years of age reported higher MCS score.

Variable	Number	Mean Score	Standard error	Test statistics value	p-value	95% CI
Age				5.366	0.001	
0-20	16	38.70	3.85			34.344 43.060
20-40	118	43.99	0.78			42.387 45.597
40-60	65	39.68	0.96			37.517 41.841
60-100	13	46.87	1.53			42.036 51.706
Sex				0.216	0.829	-3.112-2.498
Male	56	42.67	1.47			
Female	156	42.37	0.67			
Education				1.534	0.127	-0.685-5.486
Educated	170	42.92	0.73			
Uneducated	42	40.52	1.13			

Table 4: Illustrates the association of MCS with clinical characteristics. No statistical association was found between MCS and clinical characteristics.

Variable	Number	Mean score	Standard error	Test statistics value	p-value	95% CI
Diagnosis				2.115	0.080	
Migraine	120	41.97	0.87			40.345 43.591
Tension type headache	49	42.19	1.23			39.646 44.726
Mixed headache	28	41.20	1.73			38.841 45.561
Chronic daily headache	11	50.09	1.37			44.733 55.454
Cluster headache	4	40.71	1.46			31.815 49.595
Duration				1.719	0.164	
Less than 6 months	96	41.71	1.01			39.887 43.535
6 months to 1 year	36	45.38	1.23			42.396 48.354
1 year to 5 years	68	41.69	1.11			39.519 43.854
More than 5 years	12	43.86	1.79			38.702 49.022
Number of drugs				0.742	0.564	
0	27	42.40	1.39			38.938 45.870
1	33	42.75	1.79			39.614 45.884
2	78	41.78	1.09			39.752 43.831
3	64	42.39	1.13			40.140 44.642
4	10	47.04	1.80			41.346 52.736
Number of tablets				2.026	0.092	
0	27	42.40	1.39			38.985 45.823
1	70	42.78	1.15			40.660 44.906
2	63	40.27	1.23			38.030 42.506
3	43	44.56	1.26			41.853 47.271
4	8	46.91	2.23			40.628 53.190

Table 4: Illustrates the association of MCS with clinical characteristics. No statistical association was found between MCS and clinical characteristics.

PCS

		95% CI					
Model		Unstandardize d	Standard Error	Standardized a	p	Lower	Upper
H ₁	(Intercept)	40.174	1.643		< .001	36.935	43.413
	Age	0.023	0.038	0.049	0.534	-0.051	0.097
	Drugs number	-0.394	1.049	-0.062	0.708	-2.463	1.675
	Number of tablets	1.035	1.091	0.160	0.344	-1.116	3.186
	Duration continous	0.266	0.234	0.081	0.257	-0.195	0.727
	Gender (M)	1.323	1.089		0.226	-0.825	3.471
	Education class (Uneducated)	-3.570	1.367		0.010	-6.264	-0.875

MCS

⊕

		95% CI					
Model		Unstandardize d	Standard Error	Standardized a	p	Lower	Upper
H ₁	(Intercept)	39.309	2.215		< .001	34.941	43.676
	Age	0.075	0.051	0.119	0.138	-0.024	0.175
	Drugs number	-1.709	1.415	-0.203	0.228	-4.499	1.081
	Number of tablets	2.372	1.471	0.275	0.108	-0.528	5.273
	Duration continous	0.333	0.315	0.076	0.293	-0.289	0.954
	Gender (M)	0.073	1.469		0.960	-2.823	2.969
	Education class (Uneducated)	-3.798	1.843		0.041	-7.431	-0.164

Table 6 Describes the PCS and MCS score as compared with the general population.

Comparison with General Population	PCS	MCS
Same or better	34.43	40.09
Below	23.59	24.06
Well below	41.98	35.85

The comparison of the PCS and MCS score was done by the in-built feature of the ProCore Quality Metric Software. We found the only 34.43% and 40.09% of the participants had their PCS and MCS scores that were same as or better than the general population.

Drug classes	Percentage of participants using
Paracetamol	45.76
Tricyclic antidepressants	34.43
Beta blockers	3.30
Antiepileptics	9.91
Caffeine or Codeine	19.34
NSAIDS	33.02
Triptans	24.53
Selective serotonin reuptake inhibitors	12.74
Others	32.55.30

The Table 7 shows the percentage of participants using the various drugs for the treatment of their headache disorder. Others drugs included Venlafaxine, Domperidone, Olanzapine, Clonazepam and Duloxetine.

The table shows that there is no single drug with significant difference in QoL in either component.

Drug	Q o L Score	t	p	Standard error	95% CI
Paracetamol	PCS	0.779	0.437	0.938	-1.119 - 2.581
	MCS	0.258	0.797	1.259	-2.157-2.807
TCA	PCS	0.438	0.662	0.985	-2.373-1.510
	MCS	0.037	0.971	1.320	-2.555-2.651
Betablockers	PCS	1.410	0.160	2.608	-1.465-8.817
	MCS	0.856	0.393	3.505	-3.910-9.908
Antiepileptics	PCS	0.817	0.415	1.565	-4.364-1.805
	MCS	0.144	0.886	2.100	-3838-4.441
Caffeine / Codeine	PCS	0.395	0.603	1.185	-2.804-1.868
	MCS	0.829	0.408	1.586	-1.812-4.441

NSAIDS	PCS	0.575	0.566	0.997	-2.538-1.392
	MCS	1.723	0.086	1.329	-4.909-0.330
Triptans	PCS	0.111	0.912	1.088	-2.266-2.024
	MCS	-1.634	0.104	1.449	-5.223-0.489
SSRI	PCS	0.209	0.834	1.404	-3.062-2.474
	MCS	1.100	0.273	1.876	-1.635-5.763
Others	PCS	1.761	0.080	0.992	-3.702-0.208
	MCS	0.614	0.540	1.338	-1.816-3.468

Discussion

The study found that the mean PCS score was 42.08 and the mean MCS score was 42.45. The scores were similar but physical component was slightly lower than the mental component. Majority of the patients had scores below general populations in both domains. This is consistent with the findings in previous studies where QoL was impaired due to headache disorders.^{13,14}

The result from the multiple regression analysis show that having no education to have lower QoL in both in terms of PCS and MCS score. Age, number of drugs, number of tablets, duration of disease or gender did not predict QoL. As the multivariate analysis controlled for potential confounding factor, they may have masked the relationship between age and QoL.

In our study, age was not a predictor of PCS and MCS in multivariate analysis although the univariate analysis revealed population of age less than 20 years to have the least MCS score followed by those between 40 to 60 years. Also, most participants belong to age group 20-40 years with least from age above 60 years. Recently, Steinmetz et al. revealed in a study of neurological disorders that headache mostly affected in the age group 20-40 and 40-60. Those from older age group are less affected.¹⁵

Our study found no significant difference in QoL between male and female in both domains in multivariate or univariate analysis. However more females were diagnosed with headache disorders than males. Fuensalida-Novio et al. also found similar result where more females were affected but there was no difference in disability in either sex. Most studies have found more number of females to be affected than males.⁶ Bolay et al. 2015 however showed that women had longer duration and intensity of frequency of headache, although the study did not measure quality of life indices.

Multivariate analysis showed that education status was a predictor of both physical and mental domains of QoL. Educated people had higher scores compared to those who have not received formal education. It may be because of lack of health literacy and lower access to healthcare and higher stigma. The type of headache did not show any significant difference in quality of life in both mental and physical domains in our study. Terwindt et al. mentioned that headache disorder had a lower QoL scores but found no difference between Chronic TTH and Transformed Migraine. A study showed that TTH caused more affection in physical and mental domains.¹³ Monzón et al. reported that CDH scored lower on QoL indices. A study using

SF36 showed that patients with Chronic TTH and transformed migraine had worse QoL than those with migraine²⁰. Another study using SF36 on patients with migraine showed that patients had significantly worse QoL indices.²¹ Another study conducted in adolescent populations reported that migraine affected physical functions and quality significantly.²² A study done in France found that the QoL was lower in patients with headache but those with chronic headache had worse indices than patients who suffered from episodic headache.²³ The number of drugs taken showed significant association with PCS score but not with MCS not. Patients taking a single drug reported the lowest PCS score while those taking 4 drugs reported better scores. This may reflect that more drugs could better manage patients' symptoms. Number of tablets taken by the patient was not a predictor of QoL in multivariate analysis but was a predictor of PCS in univariate analysis. Patients taking a single tablet score lowest on PCS score while those with 4 tablets had the highest average PCS score. This is in conjunction with PCS scores with increased tablets or drugs having better symptom control. These findings are in contrast to similar studies where the number of medicines taken resulted in poorer QoL scores.^{24,25}

As compared with the general population the majority of the participants with headache disorders had scores that were below or well below in mental as well as physical domains. Further, 41.98% of the PCS score and 35.85% of the MCS scores were well below the average general population. The comparison with the general population was done using the Pro Core Application.

We found that the most commonly used drugs in general were Paracetamol followed by Amitriptyline and NSAIDs. Amitriptyline was used as the most common drug for symptom prevention and Paracetamol most commonly for symptom control. EFNS guideline on the treatment of tension-type headache, the most commonly affecting headache diagnosis, stated that, for prophylaxis, amitriptyline was the first line and, for symptom control, NSAIDs were the first line. Amitriptyline is effective compared to other serotonin reuptake inhibitors²⁷ The 2012 AHS/ AAN guideline stated that for patients with migraine valproate, beta-blockers and topiramate had established efficacy whereas amitriptyline, NSAIDs and Calcium Channel Blockers have probable efficacy²⁸. Antiemetics have shown to improve nausea and vomiting in patients with migraine.²⁹

Conclusion

The findings of this study highlight the substantial impact of primary headache disorders on the quality of life of individuals. Understanding the factors that contribute to the reduced QoL in these patients is crucial for developing effective interventions and improving the management of primary headache disorders in Nepal.

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