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QUALITY OF LIFE AMONG GENERAL POPULATION VERSUS PRIMARY HEADACHE PATIENTS IN MAKKAH REGION, SAUDI ARABIA

Naif Eidah Alomairi [1], Faisal Abdulrahman Althobaiti [2], Abdulrahman Awadh Althobaiti [2], Maad Saad Altalhi [2], Raghad Abdullah Alnemari [2], Ayman Abdelbaky Ahmed Atalla [3]

[1]Assistant professor and consultant Neurologist, College of Medicine, Taif University, Saudi Arabia., [2]College of Medicine, Taif University, Saudi Arabia., [3]Assistant professor and consultant of Family medicine, College of Medicine, Taif University, Saudi Arabia.

Abstract:

Background:

Almost half of the adult population in the world complains of one or more types of headache (HA) at least for one time for a lifetime. Within the headache field, much of the work relating to HRQoL has focused mainly on migraine as it is one of the most frequent primary headache diagnoses.

Objectives: *To compare the quality of life among patients with primary headache disorders and general population.*

Methods: *This is a cross-sectional study conducted over 863 individuals in Makkah Region. Data were collected via a self-administered quality of life SF-36 questionnaire. The data gathered was fed into the computer and analyzed using SPSS software.*

Results: *A total of 863 subjects were included in this study. The mean age of participants was 29 ± 10, both male and female were included with a 30.5% and 69.5%. 503 out of 863 participants suffered from headache, where it was classified into four types with the highest prevalence for tension type with about 53%, and lowest for a migraine with an aura with about 10%. We have found significant difference in quality of life between participants suffering from headache and the general population in health style, physical and emotional problems, bodily pain, social functioning and general health except for climbing of stairs which was insignificant.*

Conclusion: *We have found participants who suffered from primary headache disorders have a worse health-related quality of life compared with the general population.*

Keywords: *Quality of life, Migraine with an aura Migraine without an aura Cluster, Tension.*

Corresponding author:

Naif Eidah Alomairi,

Assistant professor and consultant Neurologist, College of Medicine, Taif University, Saudi Arabia.Email: Naif-alomairi@hotmail.com , Phone: +966534040096.

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INTRODUCTION:

The impact of an illness on the patient's physical, emotional and social functioning is measured by Health-related quality of life (HRQoL) [1]. To evaluate HRQoL, various generic instruments have been developed, which can be used across different disorders, giving the opportunity for comparisons with other medical conditions and healthy control [2, 3]. Since a migraine is one of the most frequent primary headaches diagnosed within the headache field, much of the work relating to HRQoL has focused mainly on it. Despite the lack of any physical abnormality, the characteristic of the migraine attacks and their recurring pain and associated symptoms prohibit patients to function normally.

Migraine is reported in the top 20 causes of disability worldwide according to The World Health Organization (WHO) in its Global Burden of Disease study conducted in 2000 [4].

Almost half of the adult population in the world complains of one or more types of headache (HA) at least for one time for a lifetime. With consideration to the difference between areas of the world, Migraine, tension-type headache and medication overuse headache is among the most common diseases of the human population [5]. Prevalence studies show that −75% of headaches have been experienced in the last one year among the adult population between the ages of 18 and 65 years. Migraine has affected women three folds more frequently compared to men and was observed in 11% of the adults worldwide. 1.7–4% of the adult population experiences headache for 15 days a month or more frequently. Three thousand migraine attacks are experienced each day per one million of the general population according to figures related with migraine prevalence, and the incidence of attacks [6].

The study entitled “Global Disease Burden” updated by the WHO in 2004 showed that migraine was responsible alone for 1.3% of the years with disability and the remaining headaches were responsible of a similar burden all together [7].

Common migraine triggers include long fasting, hypoglycemia, sleep disturbance, psychological stress and hormonal changes such as (menstruation, ovulation, and oral contraceptive pills). Medications also can trigger migraine (such as reserpine, nitroglycerin, and estrogen) [8]. Attacks of Migraine can occur either with an aura (typical migraine) or without an aura (classical migraine). Migraine has 4 Stages: prodrome, aura, headache attack, and post prodrome respectively [9]. Prodrome describes physical and mental changes such as tiredness, craving sweet foods, mood swings, feeling thirsty and a neck stiffness.

These feelings can last from 1 to 24 hours before headache and commonly occur in patients with a typical migraine (migraine with an aura). 10-20% from migraineurs experienced aura which represents a focal cerebral dysfunction that can last from 5 to 20 minutes before the headache onset [10]. Migraine aura may be visual (e.g., blurred vision, fortification spectra, scotomata, scintillations, micropsia, macropsia, or black dots), sensory, motor, autonomic, cognitive, behavioral, or dizziness. The headache stage usually lasts for hours and may continue to several days (status migrainosus) [11]. The headache is usually Severe, disabling the patients from doing their daily activities and disturbing their sleep. Exhaustion and lethargy felt by migraineur occurs during the post prodrome stage [9].

Cluster headache (CH) is a rare, excruciating and highly disabling headache that is strictly lateralized and typically associated with prominent cranial autonomic features or a sense of restlessness or agitation [12].

Tension type headache is an unspecific headache, which has neither been caused by vascular system nor associated with organic diseases [13]. It is the commonest type of headache; many people suffer from it in their life. Tension headache reduced persons' productivity in their job and impaired their family and social functioning. Despite the effect of tension headache on patients' life, it is considered as the most misunderstood headache type. Due to this wrong perception, people who suffer from tension headache delay in seeking medical treatment [14]. The prevalence ranges between 29 to 71%, which is limited mostly by the difference in study design [15], 5% of women and 7% of men have chronic tension headache more than 180 days per year. About 88% of women and 69% of men suffer from tension type headache in their life.

The most widely used generic instrument is the Short Form-36 (SF-36), a questionnaire developed by the Rand Corporation to assess QoL in the Medical Outcomes Study [16]. The questionnaire has been tested and validated carefully and was applied on patients with chronic diseases including chronic headaches [17-20]. Most authors [15,18] have used the International Headache Society (IHS) classification to study QoL of patients with primary headache disorders and considering episodic but recurrent headaches as synonyms of chronic

headaches. Only a few studies have evaluated QoL in so-called primary CDH, that is, those patients with headaches for 15 days/month [19, 20].

Most of the previous studies had episodic migraine patients as their only focus or had their population as patients attending specialized headache clinics. In fact, there are some studies that analyzed this point in the general population, but only analyzed it in migraine patients or tension-type headache patients or comparing migraine headache with cluster headache [20-25]. The aim of this study is to compare QoL in the general population versus primary headache patients and to compare QoL between different primary headache disorders.

METHODOLOGY:

Subjects and study design:

This has been a cross-sectional study utilizing a pre-designed questionnaire, which was done through an online survey during August 2018. The survey included the general population and patients suffering from headache in Makkah Region, Saudi Arabia. A diagnosis of a primary headache disorder was based on the IHS Criteria. The IHS criteria has an advantage in these cases which is that it has a standardized and structured method for a base for diagnosis through integration of their medical history.

The IHS (international headache society) criteria can establish a base for diagnosis through medical history depending on:

1. Frequency of attacks
2. Duration of the headache
3. Site of the headache
4. Quality of the headache
5. Severity of the headache
6. Aggravating and relieving factors related to the headache
7. Associated symptoms (nausea, vomiting, photophobia … etc)

The IHS Criteria for diagnosis of primary headache disorders is as follows:

1. Migraine without aura

Diagnostic criteria:

A. At least five attacks fulfilling criteria B–D.

B. Headache attacks lasting 4–72 hours (when untreated or unsuccessfully treated).

C. Headache has at least two of the following four characteristics:

1. Unilateral location.
2. Pulsating quality.
3. Moderate or severe pain intensity.
4. Aggravation by or causing avoidance of routine physical activity (e.g., walking or climbing stairs).

D. During headache at least one of the following:

1. Nausea and/or vomiting.
2. Photophobia and phonophobia.

E. Not better accounted for by another ICHD-3 diagnosis.

2. Migraine with aura

Diagnostic criteria:

A. At least two attacks fulfilling criteria B and C

B. One or more of the following fully reversible aura symptoms:

1. Visual.
2. Sensory.
3. Speech and/or language.
4. Motor.
5. Brainstem.
6. Retinal.

C. At least three of the following six characteristics:

1. At least one aura symptom spreads gradually over 5 minutes.
2. Two or more aura symptoms occur in succession.
3. Each individual aura symptom lasts 5–60 minutes.
4. At least one aura symptom is unilateral.
5. At least one aura symptom is positive,
6. The aura is accompanied, or followed within 60 minutes, by headache.

D. Not better accounted for by another ICHD-3 diagnosis.

3. Tension-type headache

Diagnostic criteria:

A. At least 10 episodes of headache occurring on 1– 14 days/month on average for >3 months (≥12 and <180 days/year) and fulfilling criteria B–D.

B. Lasting from 30 minutes to seven days.

C. At least two of the following four characteristics:

1. Bilateral location.
2. Pressing or tightening (non-pulsating) quality.
3. Mild or moderate intensity.

4. Not aggravated by routine physical activity such as walking or climbing stairs.

D. Both of the following:
1. No nausea or vomiting.
2. No more than one of photophobia or phonophobia.

E. Not better accounted for by another ICHD-3 diagnosis.

4. Cluster headache

Diagnostic criteria:

A. At least five attacks fulfilling criteria B–D.

B. Severe or very severe unilateral orbital, supra-orbital and/or temporal pain lasting 15–180 minutes (when untreated).

C. Either or both of the following:

1. At least one of the following symptoms or signs, ipsilateral to the headache:
   - Conjunctival injection and/or lacrimation.
   - Nasal congestion and/or rhinorrhea.
   - Eyelid oedema.
   - Forehead and facial sweating.
   - Miosis and/or ptosis.
2. A sense of restlessness or agitation.

D. Occurring with a frequency between one every other day and eight per day.

E. Not better accounted for by another ICHD-3 diagnosis.

STUDY TOOLS:

This study depended on using a modified Cleveland Clinic Canada questionnaire to establish a diagnosis of a primary headache disorder which was translated into Arabic. Also, we used a modified quality of life questionnaire short form 36 (SF-36) in Arabic language. The SF-36 is one of the most frequently used generic QOL instruments. It examines eight QOL domains: four domains represent physical (physical functioning, role-physical, bodily pain, general health) and four mental health concepts (vitality, social functioning, role-emotional, mental health). [6] Widely accepted as it is, the SF-36 is far from examining all notable aspects of QOL. Among other aspects, the SF-36 does not collect data about sleep and its quality, cognitive features, leisure activities, sexual life, self-confidence, worries, and the quality of interpersonal communication.

DATA COLLECTION:

Through an online survey during December 2018, the surveys were conducted using the SF-36 questionnaire. The survey was undertaken among population and patients suffering from headache in Makkah Region, Saudi Arabia.

STATISTICAL ANALYSIS:

Statistical analysis was done using SPSS 16.0 statistical software package. Results were presented as mean and standard deviation for quantitative data, frequencies and percent for qualitative data. Independent t test was used to compare quantitative variables between two study groups.

Chi-square test was used for comparing qualitative variables between groups, fisher exact test was used, instead of chi-square with two by two tables when expected cell count less than five. A probability value of less than or equal 0.05 was considered statistically significant.

RESULTS:

A total of 863 subjects were included in this study. The mean age of participants was 29 ± 10, both male and female were included with a 30.5% and 69.5%, respectively. They lived in Saudi Arabia, with the highest ratio for singles (58.1%), and about 70.6% from total participants had a bachelor degree. The prevalence of smoking was 16.6%, while passive smokers was 18.1%, and about 61.4% for non-smokers and only 3.9% were Ex-smokers. ;Furthermore, about 88% from all the participants did not have any chronic disease, all of which was demonstrated in table 1 .

503 out of 863 participants suffered from headache, where it was classified into four types with the highest prevalence for tension type with about 53%, and lowest for a migraine with an aura with about 10% which was shown in chart 1.

The attitude of participants toward their health status was observed in Table 2, where they tended to have great health status (mean = 1.98), and compared to one year ago, they rated the same or somewhat better health status (mean = 2.64). In addition, the participants stated their opinion in regard to activities affected by health status, where health mostly limited their daily activity with (mean = 2.41), climbing one flight of stairs with (mean = 2.67), and walking half-kilometer with (mean = 2.48). ; While, health limited climbing several flights of stairs with (mean = 2.28). The problems with work or other regular daily activities as a result of physical health and emotional problems were stated in table 2 also, as existence of cutting down the amount of time spent on work or other activities, accomplished less than they would like with about 47% for both, and didn't do work or other activities as carefully as usual with 45%. The

same table showed the status of physical health/emotional problems interfered with normal social activities with family, friends, neighbors, or groups, where results tend to slightly affect them moderately (mean 2.96), and how much bodily pain have they had during the past 4 weeks (mean= 2.85), and a little bit that pain interfered with normal work (including both work outside the home and housework) with (mean = 3.07). Furthermore, table 2 showed other feelings happened during the past 4 weeks, where participants tend to agree that little of the time to most of the time that they feel full of pep (energetic and active), been an anxious person, felt so down in the dumps that nothing could cheer them up (depressed), and feel tired (exhausted) with (means = 2.54), (2.61), (2.9), and (2.49), respectively. In table 2, the general attitude toward health status was summarized as they tend to not agree that they get sick a little easier than other people, while they tend to confuse about if they are as healthy as anybody they know, and they tend to not agree that they expect their health to get worse, and, finally, they tend to agree that they have excellent health with (mean= 1.49).

Table 3 shows an association between showing whether the participant had a headache or not with the quality of life variables, an independent t-test was performed, where a statistically significant difference in the quality of life between two groups at P-value is equal or less than 0.05. Accordingly, participants not suffering from a headache had a better evaluation of their health (P-value = 0.022). However, participants with no headache profile stated that some activities limited their life more than those who had a headache as they are practicing daily activities such as walking half-kilometer (P-value = 0.005). Participants suffering from headache stated that they cut down on the amount of time they spent on work or other activities, accomplished less than they would like and didn't do work or other activities as usual (P-value less than 0.05). During the past 4 weeks, headache associated participants, physical health or emotional problems interfered with normal social activities with family, friends, neighbors, or groups higher than normal participants (P-value less than 0.05). The degree of bodily pain one had during the past 4 weeks and how much did it interfere with the normal work (including both work outside the home and housework) was higher in headache associated participants (P-value less than 0.05). Feeling full of pep (energetic and active) by headache participants was higher than normal ones (P-value less than 0.05). Other variables such as nervousness, feeling so down in the dumps that nothing could cheer up (depressed), and feeling tired (exhausted) were seen higher in headache associated participants (P-value less than 0.05). Finally, it seems that headache participants felt that they get sick a little easier than other people and expect their health to get worse (P-value = 0.000). Generally, healthy participants felt that their health tended to be more excellent than headache participants (P-value less than 0.05). Table 4 shows a comparison of quality of life in general population with headache disorders (Migraine with an aura, Migraine without an aura, Tension, Cluster), the results have been achieved through using ANOVA test, where P-value considered significant less than 0.05. ; Therefore, There is no statistically significant difference between headache disorders in relation to general health style either this year or compared to the previous year (P-value = 0.185, and 0.381, respectively). In another way, significant difference was not existent between headache disorders in relation to physical activity that will be limited due to health status with P-values more than 0.05. The problems with work or other regular daily activities as a result of any physical health and emotional problems that were encountered during the last 4 weeks was almost the same for all headache disorders (P-value more than 0.05). In another aspect, physical health or emotional problems that interfered with normal social activities with family, friends, neighbors, or groups were almost in the same level in all headache disorders with P-value more than 0.05. Different headache disorders mostly had the same energetic and active feelings (as P-value more than 0.05) and felt the same in feeling depressed (P-value = 0.542), and all headache disorders cases felt tired (exhausted) in the same manner with (P-value = 1.617). However, results found statistically significant differences between headache disorders in feeling nervous, where who had migraine without an aura had the highest nervous feeling (mean = 2.57), while those who had migraine with an aura had the lowest nervous feeling (mean = 2.21), and tension and cluster headache were almost the same as migraine without an aura (mean = 2.46, and 2.54, respectively). Lastly, participants who had cluster headache observed the lowest agreement that they seem to get sick a little easier than other people (mean = 2.41), with P-value less than 0.05. However, all other headache types characterized with the same manner in relation to expectation to get worse health, and all have the same manner in health status as excellent, with P-value more than 0.05. Table 5, showed that there is no association between frequency of headache and quality of life where P-value is more than 0.05. Table 6, found the association between severity of headache and feelings about health status compared

to other, where who have severe headache was expressed lowest that he have health body as others (P-value less than 0.05), which reflect that they expressed lower than who have mild or moderate headache in excellency of health status (p-value less than 0.05). However, association between severity of headache and other quality of life variables was non-existent.

DISCUSSION:

Our results reported that the prevalence of a headache in Makkah Region, Saudi Arabia was 58.3%. By comparing our results with other different studies, we found that, the prevalence of a headache among our population was higher than this reported in 53.2% of individuals studied in Brazil in 2005 [22], 33.8% in Nairobi [23], and 27.9% in Kuwait [24] while the prevalence in a study conducted in Taif was 78.5% [25]. We divided our population according to the headache types into four groups. The most prevalent of which is tension-type headache which accounted for almost 53%, and the least of which was migraine with an aura with almost 11%.

In the current study males and females participated with 30.5%, and 69.5%, respectively these results matched with Almalki et al., [25] where also females seemed to be significantly more affected than males (P = 0.002), with an odds' ratio of 0.28 for the gender difference and with previous literature studies that stated that prevalence among females was more when it came to migraine headache [22, 26, 27]. We can't compare our results with the results of previous studies that analyzed QoL in primary headaches, because most of the previous studies had episodic migraine patients as their only focus or had their population as patients attending specialized headache clinics. In fact, there are some studies that analyzed this point in the general population, but only analyzed it in migraine patients or tension-type headache patients or comparing migraine headache with cluster headache [22, 27]. With these considerations taken into account, our results concur with previous studies that there is a negative influence on QoL because of primary headaches when compared with healthy individuals. We have successfully assessed HRQoL in our headache patients using the SF-36 Health Survey.

An inescapable and stamped multidimensional hindrance was shown in patients with a migraine without an aura and tension and cluster headache where results reported a significant between headache in feeling nervous, where who is a migraine without an aura were had most nervous feelings (mean = 2.57), while whom have migraine with an aura were had the least anxious feelings (mean = 2.21), and tension and cluster headache were almost the same as migraine without an aura (mean = 2.46, and 2.54, respectively).

Regarding relationship between severity of headache and feelings about health status compared to other, where patients who had a severe headache expressed that they have the lowest body health as others, which reflects that they expressed lower than who had mild or moderate headache in an Excellency of health status.

Regarding effect of physical activity on headache our results reported that participants not suffered from headache were had better evaluation for their health (P-value = 0.022).

However, participants with no headache profile stated that some activities limited their life higher than who had with headache as practice daily activities and walking half-kilometer (P-value less than 0.05). Problems where associated with headache associated participants as cut down the amount of time spent on work or other activities, accomplished less than would like, didn't do work or other activities as carefully as usual (P-value less than 0.05). Our results mismatched with Lippi *Giuseppe et al. [28]* who interviewed 103 migraine patients first presenting at a headache clinic to identify potential correlates of migraine. 38% reported a risk of developing migraine attacks during exercise, most of which during endurance activities (i.e., running). All of these patients also reported that migraine attacks tended to worsen by practicing physical exercise. Interestingly, neck pain and headaches were both more frequent in patients with exercise-provoked migraine than in those without. However, we matched with Lippi Giuseppe *et al.* [28] who performed a large population study, including 3,124 subjects (43% women) who were interviewed with the purpose of identifying potential lifestyle factors associated with the risk of developing migraine. In multivariate logistic regression analysis, low physical exercise (i.e., <30 min of physical exercise per week) was associated with a 60% higher risk of developing migraine.

Regarding effect of physical activity on headache, our results reported that participants who didn't suffer from headache had better evaluation for their health (P-value = 0.022). However, participants with no headache profile stated that some activities limited their life higher than who had with headache as practice daily activities and walking half-a kilometer (P-value less than 0.05). Problems where associated

with headache associated participants as cut down the amount of time spent on work or other activities, accomplished less than would like, didn't do work or other activities as carefully as usual (P-value less than 0.05). Our results mismatched with Lippi Giuseppe *et al.* [28] who interviewed 103 migraine patients first presenting at a headache clinic to identify potential correlates of migraine. 38% of the patients reported a risk of developing migraine attacks during exercise, most of which during endurance activities (i.e., running). All the patients also reported that migraine attacks tended to become worse by practicing physical exercise. Interestingly, both neck pain and headaches were frequent in patients with exercise-provoked migraine than in those without. However, we matched with Lippi Giuseppe *et al.* [28] who performed a large population study, including 3,124 subjects (43% women) who were interviewed with the purpose of identifying potential lifestyle factors associated with the risk of developing migraine. In multivariate, low physical exercise, logistic regression analysis (i.e., <30 min of physical exercise per week) was associated with a 60% higher risk of developing migraine.

CONCLUSION:

We have found participants who suffered from primary headache disorders have a worse health-related quality of life compared with the general population.

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Table 1 Sociodemographic data (n= 863)

Age (Mean ± SD) (29 ± 10)			
Parameters		Count	%
Gender	Male	263	30.5%
	Female	600	69.5%
Residency	Taif	457	53.0%
	Makkah	218	25.3%
	Jeddah	188	21.8%
Marital status	Single	501	58.1%
	Married	343	39.7%
	Divorced	19	2.2%
Qualification	Below the high school	31	3.6%
	High school	186	21.6%
	Bachelor degree	609	70.6%
	Master degree	37	4.3%
Smoking	Smoker	143	16.6%
	Ex-smoker	34	3.9%
	Passive smoking	156	18.1%
	Non-smoker	530	61.4%
Chronic disease	Diabetes mellitus	29	3.4%
	Hypertension	23	2.7%
	Epilepsy	6	0.7%
	Asthma	38	4.4%
	Chronic sinusitis	2	0.2%
	Hydrocephalous	1	0.1%
	Multiple sclerosis	3	0.3%
	None	761	88.0%

Chart 1 General participants' headache profile (n= 863)

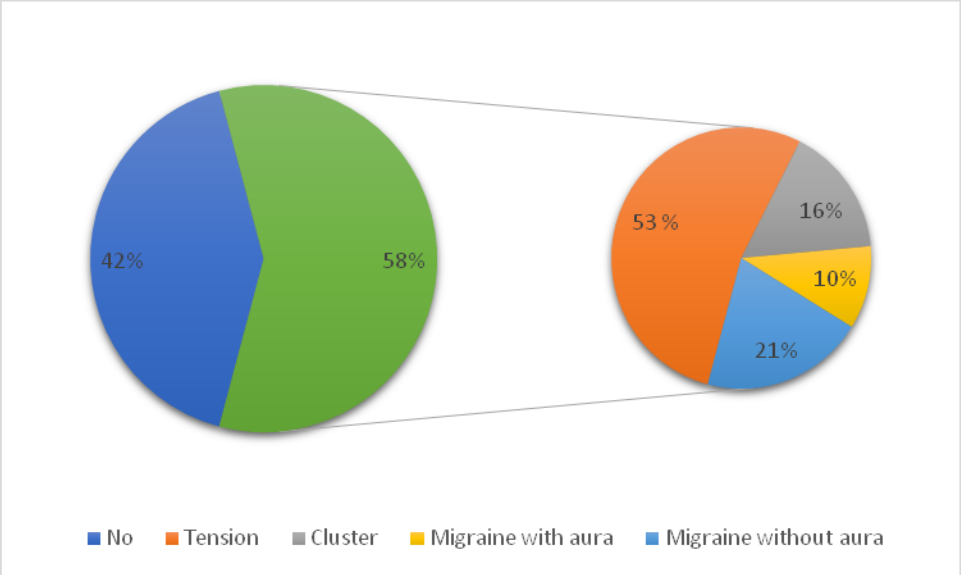

Table 2: Quality of life in general population and primary headache patients (n= 863)

Parameter			Count	%	Mean	STD
Health style		Excellent	292	33.8%	1.98	.900
		Very good	358	41.5%		
		Good	155	18.0%		
		Fair	54	6.3%		
		Poor	4	0.5%		
Health style one year ago		Much better now than one year ago	153	17.7%	2.64	.989
		Somewhat better now than one year ago	165	19.1%		
		About the same	396	45.9%		
		Somewhat worse now than one year ago	139	16.1%		
		Much worse now than one year ago	10	1.2%		
Health limitation in these activities	Practice daily activities	Limited a lot	111	12.9%	2.41	.708
		Limited a little	283	32.8%		
		Limited at all	469	54.3%		
	Climbing several flights of stairs	Limited a lot	148	17.1%	2.28	.739
		Limited a little	323	37.4%		
		Limited at all	392	45.4%		
	Climbing one flight of stairs	Limited a lot	72	8.3%	2.67	.624
		Limited a little	143	16.6%		
		Limited at all	648	75.1%		
	Walking half-kilometer	Limited a lot	108	12.5%	2.48	.707
		Limited a little	236	27.3%		
		Limited at all	519	60.1%		
Problems with work or regular daily activity in the last 4 weeks as result of physical health and emotional problems	Cut down the amount of time on work	Yes	393	45.5%	.46	.498
		No	470	54.5%		
	Accomplished less than you would like	Yes	401	46.5%	.46	.499
		No	462	53.5%		
	Didn't do work as usual	Yes	387	44.8%	.45	.498
		No	476	55.2%		
Physical health or emotional problems interfered with your normal social activities		Extremely	68	7.9%	2.96	.971
		Moderately	219	25.4%		
		Slightly	253	29.3%		
		Not at all	323	37.4%		
Body pain during the past four weeks		Severe	64	7.4%	2.85	.939
		Moderate	260	30.1%		
		Mild	277	32.1%		
		None	262	30.4%		
pain interfere with your normal work in the past four weeks		Extremely	49	5.7%	3.07	.918
		Moderately	189	21.9%		
		A little bit	280	32.4%		
		Not at all	345	40.0%		
Felt full of pep (energetic and active) during the past 4 weeks		All of the time	22	2.5%	2.54	.628
		Most of the time	391	45.3%		
		A little of the time	409	47.4%		
		None of the time	41	4.8%		
You been a very nervous person during the past 4 weeks		All of the time	58	6.7%	2.61	.764
		Most of the time	310	35.9%		
		A little of the time	404	46.8%		
		None of the time	91	10.5%		
You felt so depressed during the past 4 weeks		All of the time	47	5.4%	2.90	.841

	Most of the time	209	24.2%		
	A little of the time	386	44.7%		
	None of the time	221	25.6%		
Feel tired (exhausted) during the past 4 weeks	All of the time	108	12.5%	3.07	.918
	Most of the time	303	35.1%		
	A little of the time	374	43.3%		
	None of the time	78	9.0%		
I seem to get sick a little easier than other people	True	138	16.0%	2.34	.738
	False	429	49.7%		
	Don't know	296	34.3%		
I am as healthy as anybody I know	True	221	25.6%	2.04	.743
	False	256	29.7%		
	Don't know	386	44.7%		
I expect my health to get worse	True	105	12.2%	2.31	.677
	False	374	43.3%		
	Don't know	384	44.5%		
My health is excellent	True	523	60.6%	1.49	.672
	False	87	10.1%		
	Don't know	253	29.3%		

Table 3: Quality of life among suffered and healthy participants

Parameters		**Headache and healthy participants (Means ± STD)**				**t**	**Sig.**
		Yes (n = 503)		**No (n = 360)**			
		Mean	**STD**	**Mean**	**STD**		
Health style		2.04	0.920	1.90	0.866	2.299	0.022
Health style one year ago		2.66	1.027	2.61	0.935	0.687	0.492
Health limitation in these activities	Practice daily activities	2.35	0.706	2.51	0.700	-3.303	0.001
	Climbing several flights of stairs	2.26	0.755	2.32	0.716	-1.235	0.217
	Climbing one flight of stairs	2.65	0.636	2.70	0.606	-1.187	0.236
	Walking half-kilometer	2.42	0.715	2.56	0.690	-2.798	0.005
Problems with work or regular daily activity in the last 4 weeks as result of physical health and emotional problems	Cut down the amount of time on work	0.52	0.500	0.36	0.480	4.905	0.000
	Accomplished less than you would like	0.55	0.498	0.35	0.478	5.818	0.000
	Didn't do work as usual	0.53	0.500	0.34	0.474	5.565	0.000
Physical health or emotional problems interfered with your normal social activities		2.86	0.971	3.11	0.952	-3.823	0.000
Body pain during the past four weeks		2.63	0.908	3.17	0.888	-8.790	0.000
Pain interfere with your normal work in the past four weeks		2.90	0.918	3.30	0.867	-6.450	0.000
Felt full of pep (energetic and active) during the past 4 weeks		2.59	0.615	2.48	0.642	2.607	0.009
You been a very nervous person during the past 4 weeks		2.47	0.749	2.81	0.742	-6.547	0.000
You felt so depressed during the past 4 weeks		2.78	0.887	3.08	0.741	-5.094	0.000
Feel tired (exhausted) during the past 4 weeks		2.30	0.806	2.75	0.783	-8.056	0.000

General health	I seem to get sick a little easier than other people	2.21	0.752	2.51	0.680	-5.977	0.000
	I am as healthy as anybody I know	2.07	0.725	2.00	0.767	1.264	0.206
	I expect my health to get worse	2.24	0.698	2.42	0.632	-3.884	0.000
	My health is excellent	1.60	0.720	1.34	0.567	5.656	0.000

Table 4: Comparison of quality of life between primary headache disorders (n= 503)

Parameters		**Tension (n = 268)**	**Cluster (n = 81)**	**Migraine with aura (n = 52)**	**Migraine without aura (n = 102)**	**F**	**Sig.**
Health style		2.01 ± .90	1.94 ± .88	2.27 ± .93	2.09 ± .97	1.616	.185
Health style one year ago		2.67 ± 1.03	2.49 ± .91	2.79 ± .93	2.70 ± 1.12	1.025	.381
Health limitation in these activities	Practice daily activities	2.37 ± .73	2.42 ± .61	2.23 ± .70	2.30 ± .71	.945	.418
	Climbing several flights of stairs	2.27 ± .77	2.37 ± .67	2.06 ± .82	2.23 ± .71	1.925	.125
	Climbing one flight of stairs	2.67 ± .64	2.69 ± .56	2.52 ± .70	2.62 ± .63	1.000	.393
	Walking half-kilometer	2.46 ± .73	2.48 ± .65	2.29 ± .75	2.34 ± .69	1.400	.242
Problems with work or regular daily activity in the last 4 weeks as result of physical health and emotional problems	Cut down the amount of time on work	0.51 ± .50	0.46 ± .50	0.56 ± .50	0.59 ± .49	1.158	0.325
	Accomplished less than you would like	0.51 ± .50	0.52 ± .50	0.69 ± .47	0.60 ± .49	2.503	0.059
	Didn't do work as usual	0.50 ± .50	0.49 ± .50	0.67 ± .47	0.54 ± .50	1.823	0.142
Physical health or emotional problems interfered with your normal social activities		2.88 ± .99	2.88 ± .94	2.90 ± .93	2.76 ± .98	0.394	0.757
Body pain during the past four weeks		2.69 ± .95	2.67 ± .77	2.56 ± .92	2.47 ± .88	1.551	0.200
Pain interfere with your normal work in the past four weeks		2.94 ± .94	3.00 ± .85	2.77 ± .94	2.79 ± .90	1.268	0.285
Felt full of pep (energetic and active) during the past 4 weeks		2.62 ± .63	2.47 ± .59	2.62 ± .53	2.61 ± .63	1.260	0.287
You been a very nervous person during the past 4 weeks		2.46 ± .75	2.54 ± .69	2.21 ± .70	2.57 ± .79	2.957	0.032
You felt so depressed during the past 4 weeks		2.80 ± .89	2.83 ± .86	2.62 ± .84	2.79 ± .93	0.717	0.542
Feel tired (exhausted) during the past 4 weeks		2.31 ± .81	2.46 ± .76	2.27 ± .87	2.20 ± .80	1.617	0.185
I seem to get sick a little easier than other people		2.21 ± .74	2.41 ± .69	1.98 ± .80	2.18 ± .79	3.588	0.014
I am as healthy as anybody I know		2.04 ± .74	2.20 ± .68	2.15 ± .75	1.99 ± .71	1.627	0.182
I expect my health to get worse		2.22 ± .70	2.25 ± .68	2.15 ± .70	2.32 ± .72	0.850	0.467
My health is excellent		1.56 ± .69	1.67 ± .71	1.73 ± .77	1.61 ± .77	1.139	0.333

Table 5: Frequency of headache association with quality of life (n=503)

Headache per month				Less than 5 times	5-10 times	10 – 15 times	More than 15 times	Total	P-value
Health style		Excellent	Count	20	43	30	66	159	0.184
			%	40.8%	35.8%	30.3%	28.1%	31.6%	
		Very good	Count	19	46	48	92	205	
			%	38.8%	38.3%	48.5%	39.1%	40.8%	
		Good	Count	10	23	17	53	103	
			%	20.4%	19.2%	17.2%	22.6%	20.5%	
		Fair	Count	0	8	4	20	32	
			%	0.0%	6.7%	4.0%	8.5%	6.4%	
		Poor	Count	0	0	0	4	4	
			%	0.0%	0.0%	0.0%	1.7%	0.8%	
Health style one year ago		Much better now than one year ago	Count	13	29	13	34	89	0.161
			%	26.5%	24.2%	13.1%	14.5%	17.7%	
		Somewhat better now than one year ago	Count	8	22	21	53	104	
			%	16.3%	18.3%	21.2%	22.6%	20.7%	
		About the same	Count	17	46	50	96	209	
			%	34.7%	38.3%	50.5%	40.9%	41.6%	
		Somewhat worse now than one year ago	Count	11	22	14	45	92	
			%	22.4%	18.3%	14.1%	19.1%	18.3%	
		Much worse now than one year ago	Count	0	1	1	7	9	
			%	0.0%	0.8%	1.0%	3.0%	1.8%	
Health limitation in these activities	Practice daily activities	Yes, limited a lot	Count	7	17	15	29	68	0.719
			%	14.3%	14.2%	15.2%	12.3%	13.5%	
		Yes, limited a little	Count	20	38	37	97	192	
			%	40.8%	31.7%	37.4%	41.3%	38.2%	
		No, not limited at all	Count	22	65	47	109	243	
			%	44.9%	54.2%	47.5%	46.4%	48.3%	
	Climbing several flights of stairs	Yes, limited a lot	Count	11	24	20	40	95	0.574
			%	22.4%	20.0%	20.2%	17.0%	18.9%	
		Yes, limited a little	Count	13	39	39	93	184	
			%	26.5%	32.5%	39.4%	39.6%	36.6%	
		No, not limited at all	Count	25	57	40	102	224	
			%	51.0%	47.5%	40.4%	43.4%	44.5%	
	Climbing one flight of stairs	Yes, limited a lot	Count	5	15	13	11	44	0.057
			%	10.2%	12.5%	13.1%	4.7%	8.7%	
		Yes, limited a little	Count	12	20	13	45	90	
			%	24.5%	16.7%	13.1%	19.1%	17.9%	
		No, not limited at all	Count	32	85	73	179	369	
			%	51.0%	47.5%	40.4%	43.4%	44.5%	
	Walking half-kilometer	Yes, limited a lot	Count	7	13	20	27	67	0.180
			%	14.3%	10.8%	20.2%	11.5%	13.3%	
		Yes, limited a little	Count	14	37	23	84	158	
			%	28.6%	30.8%	23.2%	35.7%	31.4%	
		No, not limited at all	Count	28	70	56	124	278	
			%	57.1%	58.3%	56.6%	52.8%	55.3%	

Table 6: Severity of headache association with quality of life (n=503)

Parameter			Severity of headache			Total	P-value
			Mild	Moderate	Severe		
Felt full of pep (energetic and active) during the past 4 weeks	All of the time	Count	2	6	1	9	0.603
		%	5.4%	1.7%	0.9%	1.8%	
	Most of the time	Count	15	157	41	213	
		%	40.5%	43.6%	38.7%	42.3%	
	A little of the time	Count	19	179	58	256	
		%	51.4%	49.7%	54.7%	50.9%	
	None of the time	Count	1	18	6	25	
		%	2.7%	5.0%	5.7%	5.0%	
You been a very nervous person during the past 4 weeks	All of the time	Count	3	27	14	44	0.322
		%	8.1%	7.5%	13.2%	8.7%	
	Most of the time	Count	13	152	47	212	
		%	35.1%	42.2%	44.3%	42.1%	
	A little of the time	Count	20	154	39	213	
		%	54.1%	42.8%	36.8%	42.3%	
	None of the time	Count	1	27	6	34	
		%	2.7%	7.5%	5.7%	6.8%	
You felt so depressed during the past 4 weeks	All of the time	Count	5	23	10	38	0.213
		%	13.5%	6.4%	9.4%	7.6%	
	Most of the time	Count	10	102	38	150	
		%	27.0%	28.3%	35.8%	29.8%	
	A little of the time	Count	16	142	40	198	
		%	43.2%	39.4%	37.7%	39.4%	
	None of the time	Count	6	93	18	117	
		%	16.2%	25.8%	17.0%	23.3%	
Feel tired (exhausted) during the past 4 weeks	All of the time	Count	8	56	21	85	0.525
		%	21.6%	15.6%	19.8%	16.9%	
	Most of the time	Count	13	144	48	205	
		%	35.1%	40.0%	45.3%	40.8%	
	A little of the time	Count	15	142	31	188	
		%	40.5%	39.4%	29.2%	37.4%	
	None of the time	Count	1	18	6	25	
		%	2.7%	5.0%	5.7%	5.0%	
I seem to get sick a little easier than other people	True	Count	12	64	24	100	0.068
		%	32.4%	17.8%	22.6%	19.9%	
	Do not Know	Count	8	143	45	196	
		%	21.6%	39.7%	42.5%	39.0%	
	False	Count	17	153	37	207	
		%	45.9%	42.5%	34.9%	41.2%	
I am as healthy as anybody I know	True	Count	12	84	20	116	0.029
		%	32.4%	23.3%	18.9%	23.1%	
	Do not Know	Count	18	177	42	237	
		%	48.6%	49.2%	39.6%	47.1%	
	False	Count	7	99	44	150	
		%	18.9%	27.5%	41.5%	29.8%	
I expect my health to get worse	True	Count	5	50	22	77	0.424
		%	13.5%	13.9%	20.8%	15.3%	
	Do not Know	Count	15	168	47	230	
		%	40.5%	46.7%	44.3%	45.7%	
	False	Count	17	142	37	196	
		%	45.9%	39.4%	34.9%	39.0%	

My health is excellent	True	Count	26	198	46	270	0.000
		%	70.3%	55.0%	43.4%	53.7%	
	Do not Know	Count	10	121	32	163	
		%	27.0%	33.6%	30.2%	32.4%	
	False	Count	1	41	28	70	
		%	2.7%	11.4%	26.4%	13.9%	