

Types and Impacts of Headache on Work and Life among Physicians

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Abstract

Background: Headache is the one of the most frequent diagnoses in neurology outpatient clinics. More than 90% of individuals experience headache from time to time in their life. Most headaches occur in the daytime and affect nearly all aspects of life. Family, friendships, daily living activities, exercise, diet, sleep and work productivity are all affected. **Aim:** To determine types of headache and evaluate the degree of affected daily achievement of physicians suffering from headache. **Patients and Methods:** full patient history record and neurological examination were applied. The MIDAS (Migraine Disability Assessment) Questionnaire was used to assess disability in daily achievement at work and home caused by headache over the last three months. MIDAS was applied on 207 female and male resident physicians suffering from headache. All subjects are working at Suez Canal University and Ismailia general hospitals with different specialties. **Results:** The results showed that 80.19%, 19.32% and 0.48% of the subjects are suffering from tension-type headache, migraine and cluster headache respectively. Of all the subjects, 40.5% reported little or no disability, 14.01% had Mild disability, 23.6% showed moderate disability, 21.7% reported severe disability. There was strong positive correlation between disability grade, number of days with headache and specialties with marked stress. Furthermore, negative association was recorded with increasing duration of working hours ($R^2 = 0.90$, $p < 0.05$). **Conclusion:** Tension-type headache is the most widespread type of headache followed by migraine. There was a negative association between the number of years of work, and disability score. On the contrary, there was a positive association between work shifts and specialties exposed to marked stress such as surgeons, ICU physicians and emergency doctors with increasing disability score. Notably, the disability score increases exponentially with the increasing days of headache.

Keywords: Headache, Migraine, Physicians, Disability, Work

Introduction

Headache is one of the most frequent diagnoses in neurology outpatient clinics⁽¹⁾. Most headaches occur in the morning and affect nearly all aspects of life. Family, friendships, daily living activities, exercise, diet, sleep, and work productivity are all affected by headaches⁽²⁾. About 70%-90% of

persons reported their suffering from headache from a time to time in their life⁽¹⁾. According to the International Classification of Headache (ICHD), tension-type headache is the most common cause of headache in the general population and is most probably considered a disabling disease that often needs medical consultation; its diagnosis depends mainly upon

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good medical history and clinical examination⁽³⁾. Worldwide, it has been estimated that the prevalence of headache disorder among adults is about 50%. Markedly, 50% to 75% of 18–65 years adults have experienced headache in the last year and, among those subjects, 30% have reported migraine⁽⁴⁾. Most patients with migraine do not consult doctors, nor do they get medications. Less than 15% of patients consult neurologists⁽⁵⁾. The ICHD considered Migraine as a chronic disease with aura and without aura manifestations that increase with time⁽⁶⁾. An international study was achieved by Dueland et al. ⁽⁷⁾ to assess the influence of migraine on work, household and leisure activities. The study was conducted on 1810 female participants who were working full or part time from different countries. The study revealed that 46% of the contributors lost at least 1 day of work or school and 74% were prohibited from working fully at work or school because of headaches. The mean of days of absenteeism from school or work was 1.9 days over 6 months. 62% of subjects reported one or more incidences of being incapable to spend time with their families while 67% reported that they were unable to enjoy leisure activities as a consequence of Migraine⁽⁷⁾. Medical students represent a vulnerable group to headaches due to various stressors of exhausted study, graduation, specialization and work⁽⁸⁾. In order to improve patient care and physicians' performance, this study focuses on physicians with different specialties; ages and work nature to 1) estimate the frequency of different forms of headache. 2) To assess the effect of headaches on life and work and 3) to determine the predictors of disability among that studied group.

Subjects and Methods

To determine the impact of headache attacks on physicians, data was collected

from 207 participants from Ismailia General Hospital, Ismailia University Hospitals. Additionally, neurological history was provided and a neurological examination was applied upon 82 male and 125 female physicians to determine the type of underlying headache according to the International Classification of Headache Disorders, 2nd edition (ICDH-II)⁽⁹⁾. History of headache is the main tool used to recognize the pattern to make an accurate diagnosis⁽¹⁰⁾. The participants filled the MIDAS (Migraine Disability Assessment) Questionnaire with tested validity and reliability⁽¹¹⁾. It was designed to help assessing the missed days of work (either activity as a whole or productivity reduced by 50% at least), household and non-work time over the last 3 months. The MIDAS score is calculated as the sum of above missed days. Then, the score is converted into grades as follows; grade I (scores, 0–5) little or no disability, grade II (scores, 6–10) mild disability, grade III (scores, 11–20) moderate disability and grade IV (21 or more) severe disability. Data was collected from Jan 2016 to Jan 2017. The subjects were interviewed from different departments of both hospitals; Clinical path, Ophthalmology, Pediatrics, Neurology, Emergency and ICU departments. The data was collected by passing through all sections of the hospital and conducting an interview to take a full personal and medical history. Afterwards, MIDAS forms were filled out by all physicians who have suffered a headache during the last 3 months. Finally, a date for neurological examination was determined in the neurological clinic at the hospital. All procedures of the study were compiled in accordance with local legislations and the Helsinki Declaration of Biomedical Ethics (World Medical Association Declaration, 2000). All physicians contributed in the study gave informed consents after providing an appropriate clarification about the confidentiality of data, the aim and the objectives of the study.

Statistical Analysis

The statistical analyses were carried out using SPSS software version 16.0 (SPSS Inc., Chicago, Illinois, USA). The α level was set at 0.05, so the level of confidence was at 95%. Data was stratified by specialties, differences between the specialties regarding grades was evaluated using Kruskal Wallis test, and a comparison of gender regarding the grades of disability was evaluated using Pearson's chi square test. ANOVA was used to compare age, working hours, working days and days of headache within different disability grades. Spearman correlation between disability grade and age, working hours and

working days, number of days with headache and severity of pain, a linear regression was implemented to determine probable predictors of the grade of headache the results stated as β coefficient with 95% confidence intervals and Probability (P) values.

Results

The results reveal that females are represented more than males (125, 60.39% and 82, 39.61% respectively); as recorded in table (1). The results show that 80.19%, 19.32%, and 0.48% are suffering from tension type headache, migraine, and cluster headache respectively.

Table 1: Description of underlying studied population.

Variable		
Age in yrs (Mean \pm SD)	27.96 \pm 5.92	
Duration of working (Mean \pm SD)	4.20 \pm 5.04	
Working hours/day (Mean \pm SD)	10.11 \pm 2.70	
# days with headache (Mean \pm SD)	10.72 \pm 12.60	
Gender (No. %)		
- Male	82	39.61
- Female	125	60.39
Specialty (No. %)		
- Clinical path, Ophthalmology	50	24.15
- Pediatrics	38	18.36
- Internal Medicine and its branches	58	28.02
- Obstetrics and Surgeries	40	19.32
- Emergency, ICU	21	10.14
Medical conditions (No. %)		
- Migraine	40	19.32
- Tension type headache	166	80.19
- Cluster type headache	1	0.48

Regarding specialty, internal medicine department and its branches (neuropsychiatry) exemplified the highest proportion 28.02% followed by clinical pathology and ophthalmology departments 24.15%, the least represented departments were emergency and ICU being 10.1%. 28% of participants miss work because of headaches, while 58% of physicians reported decreasing

their productivity at work by more than half due to headaches. 58.4% of physicians cannot hold household work (i.e. household work, home repairs and maintenance, shopping, caring for children and relatives) because of headaches, whereas 64.3% miss family, social or leisure activities. 39% of males and 41.6% of females exhibited little or no disability (0-5 days) ($p > 0.05$), 9.8% of

males and 16.8% of females revealed mild disability (6-10 days) ($p>0.05$), while severe

disability (>21) was 29% in males and 16.8% in females ($p<0.05$), table (2).

Table 2: Frequency of disability grade according to gender

Variable Category †	Males		Females		Chi square	Total	
	No.	%	No.	%		No.	%
Disability grade							
Little or no disability(i)	32	39.0	52	41.6	0.77	84	40.5
Mild disability(ii)	8	9.7	21	16.8	0.22	29	14.0
Moderate disability(iii)	18	21.9	31	24.8	0.74	49	23.6
Severe disability(iv)	24	29.2	21	16.8	0.04*	45	21.7
Total	82	100	125	100	-	207	100

†: little or no disability (0-5), mild disability (6-10), moderate disability (11-20), severe disability (more than 21), chi square test was used, P- Value= 0.136

Table (3) showed negative weak correlation between disability grade with mean age and working duration ($p<0.05$ for duration of working), while there was statistically positive strong correlation between disability grade with working hours and number of days of headache ($p<0.05$). There was a statistically significant

difference between disability grades among different specialties ($p<0.05$), with low grades among clinical pathology, ophthalmology and pediatrics departments (grade 1), higher grades (3,4) among internal medicine, surgeries, emergency and ICU departments, presented in table (4). As shown in table (5).

Table 3: correlation between disability grade and age, duration of working in years, working hours per day, days of headache, and pain

Variable	Mean±SD	rho †	P-value
- Age	27.96±5.92	-0.106	0.127
- Duration of working	4.20± 5.04	-0.430	0.040*
- Working hours	10.11±2.70	0.609	0.000*
- Number of days of Headache	10.72±12.60	0.618	0.000*
- Pain severity (Median)	3	0.482	0.000*

†: Spearman correlation, *: statistically significant at 95% level of confidence.

There is an increase of working hours per day associated with significant increase in grade of disability, 3rd and 4th grades showed mean working hours of (11.02±2.00, 12.93±2.94) respectively. Also, mean number of working years decreased with increased grade of disability. The third and fourth grades showed mean working years of (4.47±4.62, 2.27±3.91) respectively. The number of headaches per day statistically increased with increasing grades of

disability; the mean was 15.94±3.28, 33.09±7.10 in 3rd and 4th grades respectively. linear regression model in table (6) was applied to determine the predictors of disability score among the studied sample, there was a negative association between working years and specialty with disability score ($p<0.05$, $R^2=0.90$), and positive association between days of headache and disability score ($p<0.05$).

Discussion

The present study assesses the characteristics of headaches and their impact on the daily activities of physicians at Suez Canal University and Ismailia General Hospital, by

using the MIDAS questionnaire. Our sample represented 207 of the physicians suffering from headache working in these hospitals. The responding rate ranged between 93-95% among all departments of both hospitals.

Table 4: Comparison of the disability grade between different specialties.

Specialty	Disability grade			p-value †
	median	No.	%	
- Clinical path, Ophthalmology				0.000*
- Pediatrics	1.00	50	24.15	
- Internal Medicine and its branches	1.00	38	18.36	
- Obstetrics and Surgeries	3.00	58	28.02	
- Emergency, ICU	4.00	40	19.32	
	4.00	21	10.14	

†Kruskal Wallis test, *statistically significant at 95% level of confidence.

There were not any statistically significant differences between baseline data of respondents and non-respondents that may affect the outcome variable. Therefore, the possibility of selection bias; though present, was low. Moreover, no information on treatment and the full characterization of the job of physicians under the current study was not sufficient. The study revealed that the most frequent headache type was tension-type headache (80%) whereas migraine headaches represented (19.32%) of the study group. In order not to miss-classify headache, the respondents were interviewed by a neurologist. Thus, participants with headache were classified according to established clinical criteria while related disabilities were determined. In contrast to a study done in Copenhagen, Denmark, the prevalence of Migraine was 6% and 15% in men and women respectively with total prevalence of 11% whereas tension-type headache represented 63% and 86% in males and females respectively with a total prevalence of 79%⁽¹²⁾. When this study was repeated in 2001, after 12 years, on a comparable population, the prevalence of Migraine reached 15% and the tension type-

headache increased amounting to 87%. This represents a significant increase of tension-type headache that is higher than the previous study, which is nearer to the prevalence of the current study⁽¹³⁾. In a population based study achieved in Baltimore, episodic tension type headache was 38.3%⁽¹⁴⁾. In a study in Taiwan achieved on population-based Cohort study, the prevalence of Migraine among health care providers was higher than general population⁽¹⁵⁾. In the current study, 28%, 58%, 58.4%, and 64% miss work, had reduced productivity at work, cannot achieve their household work and loss family or leisure time activities due to their headaches respectively, this was less than that reported by Dueland et al.⁽⁷⁾ which showed that 46% of participants have lost at least a day of work or school and 74% were prevented from functioning fully at work or school because of Migraine. In the present study, 62% reported one or more occurrences of being unable to spend time with family or friends and 67% of the participants reported being unable to enjoy leisure activities because of Migraine. This difference can be explained by the variance between both studied populations where the

general population in Dueland study was considered as sociodemographic charac-

teristics and data collection methods and sample size were different.

Table 5: Age, working hours, working years and number of headache days according to disability grades.

	grade	No.	Mean \pm SD	Confidence interval		P-Value †
				lower limit	upper limit	
Age	i	84	28.00 \pm 6.02	26.69	29.31	0.028*
	ii	29	29.55 \pm 7.31	26.77	32.33	
	iii	49	28.57 \pm 6.02	26.84	30.30	
	iv	45	25.71 \pm 3.88	24.55	26.88	
Working hours	i	84	8.62 \pm 1.58	8.28	8.96	0.012*
	ii	29	8.48 \pm 1.48	7.92	9.05	
	iii	49	11.02 \pm 2.00	10.44	11.60	
	iv	45	12.93 \pm 2.94	12.05	13.81	
Duration of working	i	84	4.44 \pm 5.25	3.30	5.580	0.000*
	ii	29	6.04 \pm 4.54	3.55	8.52	
	iii	49	4.47 \pm 4.62	3.14	5.80	
	iv	45	2.27 \pm 3.91	3.51	3.22	
Headache days	i	84	2.07 \pm 2.14	1.61	2.54	0.000*
	ii	29	9.55 \pm 4.10	7.99	11.11	
	iii	49	15.94 \pm 3.28	15.00	16.88	
	iv	45	33.09 \pm 7.10	30.96	35.22	

†ANOVA, *statistically significant at 95% level of confidence.

In the current study, most of participants either males or females had little or no disability (39% and 41.6% respectively) followed by moderate disability for females (24.8%) with no statistically significant difference between both groups. Regarding severe disability, it shows statistically significant difference between both groups ($p < 0.05$) where males (29.3%) and females (16.8%). Changing of productivity or functioning at work or home with consequence disabilities can be explained by a study achieved by Kruit and his colleagues, where MRI shows a relation between history of severe headache, decreased cortical volume and white matter hyperintensities numbers⁽¹⁶⁾. These cerebral alterations are associated with decreased cognition and decreased neuropsychological tests⁽¹⁷⁾ such as attention and executive

functions⁽¹⁸⁾. Cognition, learning, memory, and psychomotor speed were all affected in headache patients⁽¹⁹⁾ probably due to decrease volume of the gray matter, in the parietal and frontal lobe⁽²⁰⁾. Recent clinical study providing evidence that the consequences of migraine may extend further than episodic symptoms to comprise functional brain dysfunction and which until now uncertain but are of considerable public health importance⁽²¹⁾. In contrast to a study by Leijdekker⁽²²⁾ assessed the relationship between migraine and cognitive weakening in subjects with prolonged history of migraine and other control group, a battery of neuropsychological tests was applied on both group with no statistically significant difference between both groups regarding cognitive function. A study by Zeitlin et al was conducted upon

ninety-nine subjects with migraine and their spouses (who were used as controls) to determine the relation between cortical disturbance and cognitive impairment in

patients with severe migraine. The results reveal that subjects with severe migraine showed alteration in motor speed and decision-making ability⁽²³⁾.

Table 6: Predictors of disability score among the studied population

Predictors	β coefficient	95% CI		P-value
		Lower	upper	
Constant	2.902	0.51	4.23	0.04*
Specialty	5.10	3.60	13.14	0.04*
Duration of working years	-1.802	-0.90	3.14	0.03*
Days of Headache	1.346	1.23	2.45	0.00*

ANOVA= 408.5, P-value=0.000*, $R^2 = 0.90$, *statistically significant at $p < 0.05$, Dependent variable was disability score; independent variables include: Age in years, work duration in years, Working hours per week, days of headache, specialty (emergency, ICU, and surgeries=1, pediatrics, clinical pathology and ophthalmology=0), gender (female=1, male=0).

In this study females were represented more than males and the main finding demonstrated the occurrence of severe and little or no disability in (21.74%) and (40.58%) respectively of the studied group. Headaches affect persons of all age groups and genders, and are considered an important cause of disability, impaired social life, and academic activities⁽²⁴⁾, in the current study higher grades of disability were represented among internal medicine, surgeries, emergency and ICU departments, probably due to association with increased work load, working hours and work shifts that is usually combined with Fatigue, lack of sleep, or changing of sleep schedule. In our study the increased working hours per day is associated with significant increase in the grade of disability. While with increasing age and working years was significantly concomitant with lower grades of disability, since with increasing experience, more maturation of coping and adaptation to stressful working conditions, with less frequency of headache. Also, in the current study, there was strong significant correlation ($Rho=0.61$, $p < 0.05$) between disability grade with frequency of headache and pain severity. Linear regression analysis revealed that specialty, duration of working in years and frequency of headache were

the predictors of the grade of disability ($R^2 = 0.90$). The inverse relation between disability score and duration of work can be contributed to the development of coping mechanisms with increasing experience over years that make the subject had more ability to work with little impact of their headaches on their work and life. This was in consistent with a study conducted by Buse et al. (2011) which reported that long duration of headache, severity of headache and more headache frequency are significant predictors of adverse impacts of headache⁽²⁵⁾.

Conclusion

Tension type headache is the commonest type of headache among physicians in Ismailia, Egypt followed by migraine from different specialties; cluster headache is the least frequent. There is a positive association between number of days with headache and disability score and negative association between working duration and grade of disability due to headache. Specialties with more work shifts and stressful working conditions are more liable to have headaches. Better understanding of headaches and follow up of cases are essential for physicians and their careers.

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