

ORIGINAL PAPER

Affected Daily Activities of Hospitalized Children and Teenagers with Headache

Evangelia Ziampra

Head Nurse, Pediatric Clinic, General Hospital of Kozani, Greece

Graduate Student "Treating pain," Medical School, University of Ioannina, Greece

Dimitris Damigos, PhD

Assistant Professor of Medical Psychology, Medical School, University of Ioannina, Greece

Maria Saridi, PhD

Director of Nursing, General Hospital of Korinthos, Greece

Correspondence: Evangelia Ziampra, 4 Solonos str., GR50100, Kozani, Greece

E-mail: liziampra@yahoo.com

Abstract

Background: Headache is a symptom that can cause discomfort not only to adults but, also, to children. The effects that headaches have in the daily routine of children and teenagers depend on the condition's cause, and its frequency and intensity. Headache leads to a decrease in daily activity during the crisis and during periods of intercritical, with impact on quality of life.

Aim: To determine if the headache of hospitalized children is related to the quality of life and the degree of impact, to the daily life of children of both sexes aged 3-16 years.

Methodology: The sample consisted of 52 children hospitalized in pediatric clinic who came to the hospital with a severe headache. The questionnaire used (Headache Questionnaire- McKenzie Pediatrics 2010) includes questions relating to general information, history and habits of children and the pediatric quality of life (EQ-5D-Y) to record the state of child health days hospitalized and to determine the quality of life. For the statistical analysis used the program SPSS 22.0

Results: The mean age of the children was 6-14 years and the average length of stay 1-5 days. Headache in almost all participants (93%), accompanied by other symptoms with major nausea (19%) and dizziness (29%). Children with headache absent from school, they don't looking after themselves (33%) and not participate in their daily activities-hobby(29%). The quality of life was affected. When children suffering from headache, they feel anxiety, pain and discomfort (67%) and have worse overall, physical and psychosocial quality of life (27%).

Conclusions: Although headache was the cause of absent from school, most of the children who hospitalized with headache, showed or no disability, to the activities of their daily life and their quality of life affected moderately.

Key Words: children, headache, hospitalized, quality of life, teenagers

Introduction Headache is a common symptom that can cause discomfort not only to adults but, also, to children. The effects that headaches have in the daily routine of children and teenagers depend on the condition's cause, and its frequency and intensity (Lemone et al., 2004). Extended demographic studies proves that 60-75% of children at the age of fifteen have had experience of previous episodes of headache, with the condition of the 5-10% of these children deteriorating and, in most cases, their clinical symptoms being

compatible with those of the diagnosis of a migraine (Pexlivanidis et al., 1984). Headaches are divided in acute (generalized-local), acute relapsing and chronic (evolving-not evolving), depending on their cause and duration. Children with acute headaches have no previous medical background. The most common causes are infections and dental diseases where as infrequent causes are: arterial hypertension, acute use or exposure to substances or drugs, meningitis, intracranial bleeding,

hydrocephalous, tumors and brain abscesses. The most common causes of acute relapsing headache are the migraine and the tension type headache (Nelson, 2002).

The most frequent causes of evolutionary headache are brain tumors and, also, other causes of increased intracranial pressure, such as abscesses and brain hematomas, and malignant intracranial hypertension. Migraine and psychogenic headaches or headaches due to stress are some of the most recurrent causes of children's headaches (Konstantopoulos, 2007 and Gascon G.; Barlow, 1970).

Furthermore, the most frequent type of headaches in children and teenagers up to 16 years old are migraine (7-10%) and tension type headache (15-20%). The most extensive study regarding the condition was conducted by Bille in Sweden, 1962 (Bille, 1989). Today, everyday experience and, also, the existing international bibliography show that the percentage of frequent headaches in children is even higher and exceeds the 50%. (Diamantopoulos, 1993). The assessment is based on certain parameters:

- the detailed background of the individual and their family
- the clinical examination
- the neurological examination
- the ophthalmoscopy
- the laboratorial investigation (EEG, CT or MRI) (Nelson, 2002)

Headaches, and especially migraines, can last from certain hours to a maximum of 2-3 days. Headaches that last only a few seconds or minutes are not necessarily of a pathological nature and can be often observed in individuals with a hypochondriac type of personality (Noulas et al., 2012). Headaches can be evaded or improved avoiding certain precipitating stimuli. Some children can sense that they are going to have a headache (migraine with aura). They sense certain releasing factors.

The treatment and cure of the headache is distinguished in pharmaceutical and non-drug treatment. The pharmaceutical treatment is symptomatic, and aims in the alleviation of installed pain with the use of analgesic medicines, suspensive, and aims in

the headache's suspension in the early stages and often during the aura phase, and finally, precautionary which aims in the avoidance of other episodes (Iragashi et al., 1992). The latter is applied mainly on patients with frequent and harrowing crises, which cannot be suspended with the suspensive treatment. Ibuprofen and acetaminophen are mainly used for the coincidental treatment of the resident headache in children with migraine or simple headache. Also, the symptoms which often accompany the resident headache should be treated, too (antiemetics, etc.) (Forsythe et al., 1984). The non-pharmaceutical treatment includes certain methods that can have positive results if applied. These methods are: the recording of the episodes in a calendar and, rest, relaxation and reflexology (Olesen, 2006). Behavior therapy constitutes a significant method of headache confrontation. Biofeedback therapy can be used in most children older than 8 years old and has been proved effective in a lot of clinical studies (Litin, 2009).

Methodology

The purpose of the study is to record and report how many incidents with headache have been hospitalized in the Pediatric Clinic of a provincial hospital within a period of 6 months and what caused them. The frequency of episodes in a particular moment will be measured and the study will show whether and how the children's daily routine is affected. Study took place from 1st November of 2013 until the 31st of MAY 2014.

There was used a questionnaire of general questions (McKenzie, 2010) and a questionnaire of measurement of life quality (EQ-5D-Y) which was tailored to the needs of the study (Herdman et al., 2011). In the first part, general information for the headache (frequency, part where the pain is located, the child's background, if they have been injured recently or in the past, family background and daily habits) are reported. In the second part of the questionnaire, regarding the quality of life, certain elements, which show the state of the health of the child or teenager for the duration of their hospitalization, are included. It is

reported whether and how their everyday routine gets affected (if one can take care of their own self, eat, play, read, participate in their daily activities, or demonstrate changes in behavior when suffering from a headache). The questionnaire was given to 57 patients and 52 of them finally completed this. 3 of them didn't know Greek (they were foreigners) and 2 of them didn't agree to participate in spite of the assurance that it would be anonymous. The response rate was 91.2%.

Regarding the moral and ethics of the study, the research protocol was approved by the Scientific Board of the study hospital. Given informed consent to the parents and fully respected the anonymity of participants.

Statistical analysis

For the statistical analysis used the program SPSS 22.0 for Windows. For a description of the quantitative variables were examined indicators of central tendency average (mean), median (median) and average (mode), as well as indicators of variation of standard deviation (s) and standard error (stddev). For a description of the qualitative variables used absolute (N) and relative (%) frequencies. The significance level was set at $p \leq 0.005$. To investigate associations between continuous (age, days of hospitalization) and ordinal variables (EQ-5D-Y), used the non-parametric correlation coefficient Spearman. For the interpretation of the values of the Spearman coefficient was used the following scale for the absolute values of p (Evans, 1996):

- Very weak correlation 0 - 0.19
- Weak correlation of 0.20 - 0.39
- Moderate correlation 0.40 - 0.59
- Strong correlation of 0.60 - 0.79
- Very strong correlation of 0.80 - 1.00

For comparisons between categorical (gender) and ordinal variables (EQ-5D-Y),

used the test statistic X² (Chi-square), as a test of independence between them. As the above valid statistical test was considered when the theoretical sizes were greater than or equal to 1 (Conover, 1999).

Results

The children surveyed were aged 3-16 years, with the largest proportion (92%) are between 6 and 14 years and the girls were little more than boys (51%). The duration of hospitalization ranged from one to five days while on the diagnosis, headache accompanied by other symptoms was recorded in 93% of participating children, while 12 patients (23%) was the diagnosis of migraine and one child (2%) were diagnosed with brain tumor (Table 1).

Regarding the incidence of headache, 17 children (32%) responded that it is the first episode, in 12 (23%) is the second episode, while only 2 (4%) reported having experienced more than six times a headache. Headache in almost all participants (93%), accompanied by other symptoms with major nausea (19%), vomiting (12%) and dizziness (29%). Stiffness showed only one child (2%), which had severe infection and only 4 children reported previous head injury before the onset of headache (8%) (Table 1).

The impact of headache on daily activity vary considerably in each child. It greatly influenced the 58% (n = 29), moderate in 35% (n = 18) and all the 17% (n = 9). Apart from their activities (reading, hobby, game) in some affected children and appetite. Specifically, 44% (n = 23) did not have an appetite to eat when suffering from headache in 31% (n = 16) have a reduced appetite, while 25% (n = 13) reported no change in appetite. Something that is also affected and sleeping children. The 33% (n = 17) stated that they could not sleep at all when suffering from a headache, the 46% (n = 24) try and sleep a little and 21% (n = 11) sleep with ease.

Table 1: Spearman correlations between age , days of hospitalization and questions of EQ-5D-Y

	Age	Days of hospitalization	Mobility	Self-handing	Activities	Pain/Discomfort	Worried
Age	-						
Days of hospitalization	-0.165	-					
Mobility	-0.348*	0.206	-				
Self-handing	-0.131	0.403**	0.408**	-			
Activities	0.162	0.316*	0.245	0.575**	-		
Pain/Discomfort	0.248	0.195	0.211	0.504*	0.591**	-	
Anxiety	0.011	0.071	0.341*	0.465**	0.661**	0.588*	-

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlation between the feeling of worried and sex.

		Pain						X^2	p
		Not worried		A bit worried		Very worried			
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Sex	Boy	9	33.3	9	33.3	9	33.3	6.53 7	0.038
	Girl	3	12.0	17	68.0	5	20.0		

Table 3: Correlation of EQ-5D-Y with age and the impact on daily activities

			Correlations						
			Age	Hospitalization	Mobility	Taking care	Activities	Feeling pain	Worried
Spearman's rho	Age	Correlation Coefficient	1.000	-.165	-.348*	-.131	.162	.248	.011
		Sig. (2-tailed)	.	.243	.011	.355	.252	.077	.939
		N	52	52	52	52	52	52	52
	Hospitalization	Correlation Coefficient	-.165	1.000	.206	.403**	.316*	.195	.071
		Sig. (2-tailed)	.243	.	.142	.003	.023	.166	.616
		N	52	52	52	52	52	52	52
	Mobility	Correlation Coefficient	-.348*	.206	1.000	.408**	.245	.211	.341*
		Sig. (2-tailed)	.011	.142	.	.003	.080	.132	.013
		N	52	52	52	52	52	52	52
	Taking care	Correlation Coefficient	-.131	.403**	.408**	1.000	.575**	.504**	.465**
Sig. (2-tailed)		.355	.003	.003	.	.000	.000	.001	
N		52	52	52	52	52	52	52	
Activities	Correlation Coefficient	.162	.316*	.245	.575**	1.000	.591**	.661**	
	Sig. (2-tailed)	.252	.023	.080	.000	.	.000	.000	
	N	52	52	52	52	52	52	52	
Feeling pain	Correlation Coefficient	.248	.195	.211	.504**	.591**	1.000	.588**	
	Sig. (2-tailed)	.077	.166	.132	.000	.000	.	.000	
	N	52	52	52	52	52	52	52	
Worried	Correlation Coefficient	.011	.071	.341*	.465**	.661**	.588**	1.000	
	Sig. (2-tailed)	.939	.616	.013	.001	.000	.000	.	
	N	52	52	52	52	52	52	52	

Table 4. Correlation of mobility with sex

Crosstab						
		MOBILITY			Total	
		No problem	Some problem	Big problem		
SEX	Boy	Count	20	4	3	27
		% within Sex	74.1%	14.8%	11.1%	100.0%
		% within MOBILITY	55.6%	33.3%	75.0%	51.9%
	Girl	Count	16	8	1	25
		% within Sex	64.0%	32.0%	4.0%	100.0%
		% within MOBILITY	44.4%	66.7%	25.0%	48.1%
Total	Count	36	12	4	52	
	% within Sex	69.2%	23.1%	7.7%	100.0%	
	% within MOBILITY	100.0%	100.0%	100.0%	100.0%	

Table 5. Correlation of mobility, self-handing and doing usual activities

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.705 ^a	2	.259
Likelihood Ratio	2.774	2	.250
Linear-by-Linear Association	.029	1	.866
N of Valid Cases	52		

According to the findings of our study, more than half of the children (65%) was busy predisposition and family history of headache. Of those in the 32% (n = 20) there is a predisposition on the part of the mother (mother and relatives) and to 19% (n = 12) there is a predisposition on the part of the father. In some of the children who experienced headache, one of the parents reported that he suffered or is suffering from vertigo. In girls with headaches during menstruation mothers reported that they were suffering from premenstrual syndrome. The rest of the children (35%, n = 22) there was no predisposition of family history.

Comparisons of the EQ-5D-Y gender, age and days of hospitalization

To determine whether the trends observed in the sample show existence of relations between the elements of the questionnaire EQ-5D-Y and sample characteristics such as gender, age and days of hospitalization were required correlations. From the analysis of the data using the Spearman's correlation coefficient *r* was detected statistically significant negative correlation between age and mobility problems (*r* = -0.348, *p* = 0.011). There namely moderate correlation between them, with increases in age tend to be associated with decreases in the degree of

mobility problems (Table 2). Detected also statistically significant and moderate positive correlation between days of hospitalization and problems Self respectively ($p = 0.403$, $p = 0.003$), while statistically significant weak positive correlation was detected between days of hospitalization and problems of participation in activities ($p = 0.316$, $p = 0.003$). Increases in hospital days that tend to be associated with increases in levels of disability and self-involvement in activities.

From the data analysis of the study, which resulted from the use of control X2, that there is no statistically significant relationship between mobility and gender ($p = 0.259$), with only 11.1% ($n = 3$) of the boys and 4% ($n = 1$) of the girls reported that their headache worsens significantly mobility. Also there is no statistically significant relationship between the self and gender ($p = 0.324$), nor relationship between participation in activities and gender ($p = 0.212$). Gender does not seem to affect the feeling of pain ($p = 0.507$), with boys less pain to say 14.8% ($n = 4$) compared with girls 28.0% ($n = 7$).

It also showed that there is a statistically significant relationship between the feeling of anxiety and gender ($p = 0.038$). Specifically, boys are equally distributed in the three scales of concern, while the absolute majority of girls (68.0%) have some concern, regret or resentment (Table 3).

In contrast, a statistically significant negative correlation was detected between age in years and the mobility problems ($p = 0.348$). Thus, in the direction of increasing age, tended to reduce these problems ($p = 0.111$). In addition, a statistically significant positive relationship was detected between hospital days and problems self and participation in activities ($p = 0.403$, $P = 0.003$). So it seems more hospital days tend to increase the degree of the problem and show that children in the two upper indices. In the same vein, greater problem in the self tends to increase the degree of mobility problems (23%) and feelings of anxiety (27%), which is the case with regard to the problems of self-service (43%) and participation in activities (33%), feeling pain and feeling of concern (21%). Finally, growth trends and tendencies cause

growth problems in participating in activities, the feeling of pain or discomfort and a feeling of concern (Table 4).

Finally, whatever problems occur mobility, self and participate in activities like the feeling of pain / discomfort in relation to sex, while it appears that there is a relationship between feelings of anxiety and gender, with 7 out of 10 girls are making some concern in cases of headache, while boys appear divided as to the degree they feel uncomfortable or dissatisfied (Table 5).

Discussion

Headache in children is common reaction especially after traumatic events or bad relationships between parents, if removal or separation of parents, loss of a beloved person or animal or even in most everyday situations such as poor performance in school, bullying from classmates, the pressure for success in the various activities, the non-acceptance and rejection. An exception to the above is the possibility of serious infection or disease (Olesen, 2006).

In the present study we investigated the headache that forced 57 children from 3 to 16 years to be treated in hospital and how this headache affects their everyday life. The majority of children who participated in our study were aged 6-14 years, groups related to school age but also in extracurricular activities while developing and socializing. The perception is that situations and events happening around them is evolving and characterized by the experiences and representations received. The pain seems to work differently in people and everyone understands him in his own way. In children's perception of pain compared to adults is different. Children usually when hurt, do not stop doing something that pleases them, as the game does not seem to be bothered. Data from the literature indicate that it is difficult to assess pain in infants and children, and this has led to the creation of many tools of perception and pain management in specific groups (Ballotin, 2013).

From the findings of our study showed that over 50% of participating children reported at least one accompanying symptom headache. Relative study of foreign literature reports rates itself when it comes to migraine or an infection (Powers et al.,2003). The reference (n = 8) child psychologist was because it seemed that headache ignited problems facing children at home or school or suffering from premenstrual syndrome (n = 3).

Migraine was diagnosed in 12 children (23%). A study by the Department of Neuroscience and Behavioral Sciences Medical University of Brazil in 50 children who visited the hospital at any given time 32% diagnosed with migraine. All children although absent from school and activities, it appeared that during the phase of the crisis particularly affected the quality of life (Ferracini , Dach and Speciali , 2014).

In another investigation, it appears that the headache can significantly affect the quality of life of children. Apart from the crisis itself headache, children and adolescents may develop anticipatory anxiety, knowing that at any moment a crisis could disrupt their daily lives. It is quite common for children who suffer from headache to be absent from school and can't participate in extracurricular activities. In fact, children who suffer absent from school two times more often than children who do not suffer (Terwindt et al., 2000).

In a survey by the United States also held in the local school, stated that children with headache are absent from school, do not perform the duties of the household, and does not participate in leisure activities for 23.9 days on average, because of headache . The survey was conducted in two groups of children, one with and one without headache. The quality of life was similar in the two groups with regard to self, while it was perceived as worse than the parents of children with migraine (Ferracini , Dach , Speciali , 2014).

The duration of hospitalization of children who came to the hospital suffering from headache ranged from one to five days. Few were those children (2%) who experienced recurrent episodes and consequently affected

their daily activities. Regarding the frequency of headache, 32% said it is the first episode, 23% is the second episode, and 25% that it is the third time that happens to them, while only 4% said that they do not happen often.

In a recent study, responses were assessed by reports of parents in both groups. We studied the differences between age groups in relation to the ground, intensity, disability, school performance and whether the early age of onset of headaches involving malicious reasons. The intensity was the most common diagnosis in the headache group early onset (51%). No significant differences between age groups regarding headache, etiology, disability, abnormal neuroimaging, school performance or attention problems. Despite all these patients in the early onset group had a higher prevalence of behavioral problems: 25.7% versus 11,2% (p <0.02). The authors argue that early age of onset of headache does not involve harmful ground or a severe disability (Ballotin , 2013).

In another study by the findings showed that the quality of life of children with headaches significantly influenced by the state of their health. The impact of headaches on quality of life is similar to that found for other chronic diseases (Powers et al., 2003).

In our study, the headache in almost all patients and was accompanied by other symptoms. Only 3 patients (6%) showed no sign of any other simultaneously. Specifically, the majority of participants (91%) and headache coexist with other symptoms such as nausea (19%), vomiting (12%), dizziness (29%), numbness (10%) and asthenia (13%).

The headache does not seem to pay considerably most 58% of the participants. Apart from their activities (reading, hobby, game) in some patients affected appetite (44%). Something that is also affected and sleeping children. Sleep is instead a function that is affected considerably due to headache as only to17% of children do not show any problem sleeping. Study held in Rome in a sample of children, shared some with and some without headache, proved that The relationships between headache and sleep

problems are evident even in a non-clinical population of children and adolescents, with MG showing poorer sleep quality, sleepiness and a tendency toward eveningness (Bruni et al., 2007 and Noveli et al., 2010).

Several scientific studies in London and Montreal, said a close relationship between sleep and headache: the sleep changes may reflect the appearance and increase both the duration and frequency of headache attacks. Changes in sleep architecture, along with poor sleep hygiene in children, may actually be responsible for the onset of the headache and the development of a chronic disease (Bellini et al., 2013).

In another study conducted in Palermo, Italy on sleep quality in children who experience headaches, parents reported a high rate of sleep disorders in children, including sleeping too little (42%), bruxism (29%), the child sleeping with parents (25%), and snoring (23%). Children suffering from headaches - migraines have experienced more sleep disorders compared to healthy control standards published. After controlling for demographics, we found that the frequency and duration of migraine headaches predicted specific sleep disorders, including sleep anxiety, parasomnias and sleep resistance (Miller et al., 2000 and Battistutta et al., 2009).

In our study also, in more than half of children and adolescents (65%) was busy predisposition and family history. In some of the children who experienced headache, one of his parents suffered or is suffering from vertigo. In girls with headaches (12%) during menstruation mothers suffering from premenstrual syndrome.

In a study from Haifa, Israel indicated that most children and adolescents (estimated at 70%) who have headaches or migraines have a family member also suffers from the same or suffered in childhood. Children and adolescents with migraine headaches and may also inherit the tendency to be influenced by certain triggers, such as fatigue, bright lights or the changes in the weather (Abu-Arefeh I & Russell G, 1994)..

Of the children who were hospitalized - teenagers 11 had no problem to continue to

participate in normal activities (go to school, participate in hobbies, play with their friends, or to go somewhere with their family). Most had a little trouble to make all these 24 children (46%), while 17 children (33%) had a big problem to participate in their daily activities. The pain affected the emotional state and 50% (n = 26) reported that when suffering from headache felt a little anxious, sad or unhappy.

Every child is experiencing different physical pain. This depends on how experienced the pain of parents and the importance of giving. This study showed a school-aged children and their families, about their experience of pain and that the face in America (Aromaa et al., 2000).

Comparisons of the EQ-5D-Y gender, age and days of hospitalization

The quality of life, as reported by WHO, described as a multidimensional concept, which includes the individual's subjective perception of the physical, emotional, mental, social and behavioral aspects of wellness and how they operate. Therefore, it disrupts and negatively affects any some of these aspects contribute to the decline in the quality of life of children. Headache, like any other health problem that causes children to be treated in hospitals for a few days and even refrain from such school, socializing with their friends, their daily activities, adversely affect their quality of life. If this is done at regular intervals over time, children do absences from their classes, to work harder to catch up and becomes stressed. This can trigger re a new headache. Not participating in hobbies, activities and peers can cause them problems sociability (Ferracini GN, Dach F, Speciali JG, 2014).

In our study we found a statistically significant negative relationship between age and mobility problems. Thus, in the direction of increasing age, tended to reduce these problems. In addition, a statistically significant positive relationship was detected between hospital days and problems self and participation in activities. So it seems more hospital days tend to increase the degree of the problem and show that children in these two indicators. In the same vein, greater problem in the self tends to increase the

degree of mobility problem and the feeling of unease, something happens and the problems regarding self and participation in activities, feeling pain and feeling anxious. Finally, growth trends and tendencies cause growth problems in participating in activities, the feeling of pain or discomfort and a feeling of unease.

Also, whatever problems occur mobility, self and participation in activities, like the feeling of pain / discomfort in relation to sex. On the other hand, there is a relationship between feelings of anxiety and gender, with 7 out of 10 girls are making some concern in cases of headache, while boys appear divided as to the degree they feel uncomfortable or unhappy. A research in the city of Spain, on the difference in treatment of pain and anxiety among the boys and girls showed that the gender gap begins at 13 years of age and reduced to 15 years. At that age, the physical pain is experienced differently (Romero-Acosta et al., 2013).

Conclusions

Although research on the quality of life in adults made great progress in recent years, research on the quality of life of children is the most recent research project. Headache is a symptom that often plagues some children and adolescents, and although rarely indicate anything serious, however, is an important factor of decline in quality of life of patients experienced. In our study, the headache seemed to materially affect the majority of children in their daily activities and daily practice and have some psycho-emotional burden. The counselling and psychological support for children during and after their hospital stay, with the parallel update parental environment will contribute significantly in addressing any headache that does not have some serious background disease that causes it.

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