

# Migraine and Chronic Daily Headache: Quality of life in school children in Northern Greece.

Minas Kremenopoulos, Eleftherios Kontopoulos

*1<sup>st</sup> Pediatric Department, Aristotle University of Thessaloniki, Ippokratio General Hospital, Greece*

**ABSTRACT:** Primary headaches are very frequent in childhood. Migraine consists the majority of them. It appears in all ages of childhood. Chronic Daily Headache is the most recent category of primary headaches and can be divided into 4 categories. The aim of our study was to estimate the effect of these headaches in the quality of life of school children. 100 migraine and 39 Chronic Daily Headache children, 6 to 14 years old were studied. These children underwent neurological examination and in some cases MRI and laboratory tests. CHQ - Parent Form 50 was carried out in all of them. CHQ is a general instrument that counts the social, emotional and physical state of children. Two summary scores occur, a physical and a psychosocial score, through the answers of the 50 questions of the CHQ by the parents. The results were compared to 100 healthy children. According to the study's results, migraine and Chronic Daily Headache caused a statistically significant adverse overall effect on all aspects of Quality of life in children. Furthermore, Chronic Daily Headache children had statistically significant lower CHQ scores in some aspects of quality of life and in psychosocial health summary score than migraine ones.

*Key Words: Migraine, Chronic daily headache, Quality of life, Child health questionnaire.*

## INTRODUCTION

Headache is frequent in childhood<sup>1</sup>. It is the most common cause of pain both in children and adults<sup>2,3</sup>. Migraine consists the majority of primary headaches in childhood. Its main clinical features are headache, vomiting, nausea, pain of pulsing quality unilaterally or bilaterally, phonophobia and photophobia that discourages children from social, physical and school activities. Its prevalence ranges from 5% to 10%<sup>4</sup>. Migraine appears in all ages of childhood even in infants and pre-school age children. In early childhood vomit, attitude changes which brake out as irritability or lethargy and cephalalgia comprises migraine's main clinical features<sup>5-7</sup>.

Chronic Daily Headache (CDH) consists an evolving clinical issue in the area of pediatrics. It is the most recent category of primary headaches in childhood. CDH is diagnosed when cephalalgia's duration is more than 4 hours a day, 15 times or more per month, for more than 3 months without an underlying cause.

It can be divided into 4 major categories: 1) Transformed - Chronic Migraine 2) Chronic Tension Type Headache 3) New Daily persistent Headache and 4) Continuous Migraine<sup>8</sup>. The majority of CDH children have migraine clinical features<sup>9</sup>. Chronic Migraine is the evolution of migraine. In most cases the patients are girls and suffered from typical migraine without aura in the past<sup>10</sup>. Chronic Tension Type Headache represents the evolution of episodic tension type headache. Episodes occur either daily or last a few minutes to days<sup>10</sup>. New Daily Persistent Headache is a primary headache with a sudden onset, which is due to viral and other infectious causes, or post-traumatic, without necessarily a history of headaches in the past<sup>10-11</sup>. Continuous migraine is a cephalalgia whose pain is strictly located unilaterally. It is related with autonomous clinical manifestations and it responds to the use of indomethacin<sup>12</sup>. CDH is found in about 3 to 5 % of the general population<sup>13</sup>.

The effect of primary headaches on the Quality of Life (QoL) of children comprises a large research area

**Table 1.** CHQ scores comparison between migraine and non migraine children.

	Migraine				P-value <sup>a</sup>
	YES (n = 100)		NO (n = 100)		
	Mean value	SD	Mean value	SD	
Global Health (GGH)	62,85	22,53	90,00	14,46	< 0.001
Physical Functioning (PF)	90,00	10,51	96,67	13,97	< 0.001
Role/social Emotional/ Behavioral limitations(REB)	75,67	21,29	95,00	15,98	< 0.001
Role/social physical limitations (RP)	81,00	19,54	94,50	16,08	< 0.001
Pain (BP)	66,30	20,73	85,90	20,11	< 0.001
Behavior (BE)	62,72	18,74	81,32	15,86	< 0.001
General Behavior (GBE)	64,55	24,56	86,90	15,02	< 0.001
Mental Health (MH)	60,45	20,48	80,70	16,07	< 0.001
Self Esteem (SE)	65,50	16,84	83,04	17,64	< 0.001
General Health perception (GH)	63,56	23,63	78,46	17,78	< 0.001
Emotional impact on the parent (PE)	64,58	21,50	73,58	30,55	< 0.001
Impact on the parent's personal time (PT)	70,22	22,77	90,78	19,92	< 0.001
Limitations in family activities (FA)	71,87	19,59	89,58	15,61	< 0.001
Family cohesion (FC)	66,65	20,46	81,90	19,20	< 0.001
Physical Summary score (PhS)	<b>47,41</b>	7,84	<b>53,82</b>	8,31	< 0.001
Psycosocial summary score (PsS)	<b>40,66</b>	10,10	<b>52,70</b>	9,39	< 0.001

<sup>a</sup> Mann-Whitney U test.

in paediatrics. The aim of our study is to estimate the effect of migraine and CDH in children's QoL. Based on our study, new approaches should be made in order to ameliorate the QoL in migraine children.

#### MATERIALS AND METHODS

139 children with primary headaches and 100 normal children participated in our study. 100 children suffered from migraine and 39 from CDH. These children were aged 6 to 14 years old and came from the same geographical area. The collection of our cases lasted approximately 3 years (November 2007 - November

2010). These children came from Northern Greece to the only Chronic Headache Medical Center (Ippokratio General Hospital of Thessaloniki, 1<sup>st</sup> Pediatric Department) of the area.

All children underwent a detailed neurological clinical examination. MRI was done in children fulfilling certain criterias. These criterias were the following: Pathological neurological examination, headaches occurring during sleep or headaches awakening children, vomit during sleep, headaches with increasing frequency and intensity, seizures following or accompa-

**Table 2.** CHQ scores comparison between Chronic Daily Headache and normal children.

	CDH				P-value <sup>a</sup>
	YES (n = 39)		NO (n = 100)		
	Mean value	SD	Mean value	SD	
Global Health (GGH)	59,10	20,74	90,00	14,46	< 0.001
Physica Functioning (PF)	85,33	11,65	96,67	13,97	< 0.001
Role/social Emotional/ Behavioral limitations(REB)	59,83	24,40	95,00	15,98	< 0.001
Role/social physical limitations (RP)	73,08	22,82	94,50	16,08	< 0.001
Pain (BP)	57,44	22,45	85,90	20,11	< 0.001
Behaviour (BE)	57,69	17,17	81,32	15,86	< 0.001
General Behaviour (GBE)	60,26	28,28	86,90	15,02	< 0.001
Mental Health (MH)	52,95	19,69	80,70	16,07	< 0.001
Self Esteem (SE)	57,48	16,94	83,04	17,64	< 0.001
General Health perception (GH)	64,44	18,46	78,46	17,78	< 0.001
Emotional impact on the parent (PE)	50,43	22,94	73,58	30,55	< 0.001
Impact on the parent's personal time (PT)	62,11	25,58	90,78	19,92	< 0.001
Limitations in family activities (FA)	65,71	21,62	89,58	15,61	< 0.001
Family cohesion (FC)	60,77	23,07	81,90	19,20	< 0.001
Physical Summary score (PhS)	<b>44,43</b>	8,75	<b>53,82</b>	8,31	< 0.001
Psychosocial summary score (PsS)	<b>34,40</b>	9,93	<b>52,70</b>	9,39	< 0.001

<sup>a</sup> Mann-Whitney U test.

nying headaches and finally children with headaches that are younger than 5 years old, that have learning disabilities or have growth retardation<sup>14,15</sup>. Using these examinations and the **CHQ- Parent Form 50 (CHQ-PF50)**<sup>16,17</sup> questionnaire, the physical and psychosocial status of these children was estimated. In addition to this, the effect of headaches on the quality of life of children was estimated. CHQ is a general instrument that estimates the physical, emotional and social status of children. It compares the state of health in the general population and in specific groups, in children and

adults older than 5 years. CHQ estimates the QoL of children using 50 items (questions) and scoring various aspects that are related to physical, psychological, social and emotional abilities of them. These aspects of quality of life assess two total scores, one for the physical dimension of QoL (PhS, Physical summary score) and one for the psychosocial dimension of QoL (PsS, Psychosocial summary score)<sup>16,17</sup>.

The aspects of quality-of-life through CHQ- PF50 were summarised using mean values and standard deviations (SD). Furthermore, box plots were used

**Table 3.** CHQ scores comparison between Chronic Daily Headache and Migraine children.

	Headache Type				P-value <sup>a</sup>
	Migraine (n = 100)		CDH (n = 39)		
	Mean value	SD	Mean value	SD	
Global Health (GGH)	62,85	22,53	59,10	20,74	0.242
Physical Functioning (PF)	90,00	10,51	85,33	11,65	0.011
Role/social Emotional/ Behavioral limitations(REB)	75,67	21,29	59,83	24,40	< 0.001
Role/social physical limitations (RP)	81,00	19,54	73,08	22,82	0.063
Pain (BP)	66,30	20,73	57,44	22,45	0.033
Behavior (BE)	62,72	18,74	57,69	17,17	0.086
General Behavior (GBE)	64,55	24,56	60,26	28,28	0.390
Mental Health (MH)	60,45	20,48	52,95	19,69	0.032
Self Esteem (SE)	65,50	16,84	57,48	16,94	0.014
General Health perception (GH)	63,56	23,63	64,44	18,46	0.831
Emotional impact on the parent (PE)	64,58	21,50	50,43	22,94	0.001
Impact on the parent's personal time (PT)	70,22	22,77	62,11	25,58	0.082
Limitations in family activities (FA)	71,87	19,59	65,71	21,62	0.161
Family cohesion (FC)	66,65	20,46	60,77	23,07	0.167
Physical Summary score (PhS)	47,41	7,84	44,43	8,75	0.070
Psychosocial summary score (PsS)	<b>40,66</b>	10,10	<b>34,40</b>	9,93	0.002

<sup>a</sup> Mann-Whitney U test.

for the graphs of the total scores. The Kolmogorov-Smirnov test and the Shapiro-Wilk test was used in the quantitative variables. The comparison of the groups was made by Student's t test when data was normally distributed or else by Mann-Whitney U test a non parametric analysis. A p value <0 .05 was considered significant.

### RESULTS

Migraine and CDH cause a statistically significant adverse overall effect on the patients quality of life (p

< 0.001, for all comparisons). In all clinical aspects of QoL, migraine and CDH children had significant **lower CHQ scores** than normal ones (Table 1, 2). Furthermore, in our study, a comparison between the QoL of migraine children and CDH children was made. CDH children had statistically significant **lower CHQ scores** than migraine children in the following aspects of quality of life: Physical Functioning (PF, p = 0.011), Role/social Emotional/Behavioral limitations (REB, p < 0.001), Pain (BP, p = 0.033), Mental Health (MH, p = 0.032), Self Esteem (SE, P = 0.014),

**Table 4.** CHQ scores comparison between Chronic Daily Headache and Migraine boys.

	Headache Type				P-value <sup>a</sup>
	Migraine (n = 71)		CDH (n = 9)		
	Mean value	SD	Mean value	SD	
Global Health (GGH)	63,73	20,83	63,89	19,33	0.952
Physical Functioning (PF)	90,06	9,89	90,74	7,35	0.662
Role/social Emotional/ Behavioral limitations (REB)	76,84	20,64	64,20	18,24	0.034
Role/social physical limitations (RP)	81,46	19,22	85,19	17,57	0.624
Pain (BP)	67,18	19,06	64,44	20,07	0.589
Behaviour (BE)	64,77	17,58	54,07	18,07	0.072
General Behaviour (GBE)	67,46	22,58	55,00	31,82	0.200
Mental Health (MH)	63,59	19,16	55,56	17,22	0.199
Self Esteem (SE)	66,43	17,80	63,89	21,45	0.748
General Health perception (GH)	63,73	22,65	68,06	19,49	0.709
Emotional impact on the parent (PE)	65,14	21,14	49,07	21,83	0.041
Impact on the parent's personal time (PT)	69,64	23,15	51,85	24,85	0.042
Limitations in family activities (FA)	72,30	19,00	66,67	24,12	0.520
Family cohesion (FC)	68,38	20,75	52,22	27,63	0.075
Physical Summary score (PhS)	47,25	7,30	48,61	7,42	0.802
Psychosocial summary score (PsS)	<b>41,79</b>	9,72	<b>33,63</b>	11,05	0.045

<sup>a</sup> Mann-Whitney U test.

emotional impact on the parent (PE,  $p = 0.001$ ) and in total, **Psychosocial Summary Score (PsS)**,  $p = 0.02$ ) (Table 3, Figure 1).

CDH boys and girls had a lower level of QoL compared to migraine boys and girls correspondingly. CDH boys had statistically significant **lower CHQ scores** than migraine boys in the following aspects of quality of life: Role/social Emotional/Behavioral limitations (REB,  $p = 0.034$ ), emotional impact on the parent (PE,  $p = 0.041$ ), parental time limitation (PT,  $p = 0.042$ ) and in total, **Psychosocial Summary Score (PsS)**,  $p = 0.045$ ) (Table 4). Finally, CDH girls had sta-

tistically significant **lower CHQ scores** than migraine girls in the following aspects of quality of life: Physical Functioning (PF,  $P = 0.026$ ), Role/social Emotional/Behavioral limitations (REB,  $p = 0.018$ ), emotional impact on the parent (PE,  $p = 0.044$ ), parental time limitation (PT,  $p = 0.042$ ) and in total, **Physical Summary Score (PsS)**,  $p = 0.045$ ) (Table 5).

## DISCUSSION

Comparing the summary CHQ scores of the migraine and CDH children to the normal ones, we concluded that migraine and CDH had a statistically significant

**Table 5.** CHQ scores comparison between Chronic Daily Headache and Migraine girls.

	Headache Type				Headache Type
	Migraine (n = 29)		CDH (n = 30)		
	Mean value	SD	Mean value	SD	
Global Health (GGH)	60,69	26,52	57,67	21,24	0.439 <sup>a</sup>
Physical Functioning (PF)	89,85	12,07	83,70	12,29	0.026 <sup>a</sup>
Role/social Emotional/ Behavioral limitations(REB)	72,80	22,92	58,52	26,09	0.018 <sup>a</sup>
Role/social physical limitations (RP)	79,89	20,60	69,44	23,19	0.075 <sup>a</sup>
Pain (BP)	64,14	24,57	55,33	23,00	0.141 <sup>a</sup>
Behavior (BE)	57,70	20,77	58,78	17,05	0.828 <sup>β</sup>
General Behavior (GBE)	57,41	27,99	61,83	27,53	0.564 <sup>a</sup>
Mental Health (MH)	52,76	21,86	52,17	20,58	0.915 <sup>β</sup>
Self Esteem (SE)	63,22	14,22	55,56	15,25	0.051 <sup>β</sup>
General Health perception (GH)	63,13	26,31	63,36	18,34	0.699 <sup>a</sup>
Emotional impact on the parent (PE)	63,22	22,66	50,83	23,61	0.044 <sup>β</sup>
Impact on the parent's personal time (PT)	71,65	22,14	65,19	25,39	0.242 <sup>a</sup>
Limitations in family activities (FA)	70,83	21,28	65,42	21,25	0.337 <sup>a</sup>
Family cohesion (FC)	62,41	19,44	63,33	21,39	0.879 <sup>a</sup>
Physical Summary score (PhS)	<b>47,82</b>	9,16	<b>43,18</b>	8,84	0.045 <sup>a</sup>
Psychosocial summary score (PsS)	37,90	10,64	34,63	9,77	0.223 <sup>β</sup>

<sup>a</sup> Mann-Whitney U test

<sup>β</sup> Student's T-test.

adverse effect on all aspects of quality of life of children (Tables 1, 2). These results comply with recent literature. In Netherlands, CHQ-PF50 was used to evaluate the quality of life of 70 children with primary headaches. These children had significant lower CHQ scores than normal ones, except from Self-esteem (SF)<sup>18</sup>. Using PedMIDAS (Pediatric Migraine Disability Assessment Score) and PedsQL4 (Pediatric Quality of life Inventory) in a population of 1037 migraine children, the conclusion that occurred was that QoL of these children was lower than those without migraine,

with asthma, diabetes or cancer<sup>19</sup>. In another recent study of a population of 3963 migraine children, using PedMIDAS and Adolescent Depression Inventory (ADI), it occurred that QoL of migraine children was lower than QoL of normal ones<sup>20</sup>. Migraine had a negative effect on the quality of life and school activity of 1679 children in Nigeria and 76 migraine children in Turkey<sup>21,22</sup>. CDH children have sleep and mood disorders, stress, anxiety, school absences and school phobia, family, physical and psychosocial problems<sup>23-27</sup>.

In our study, there was a statistical comparison

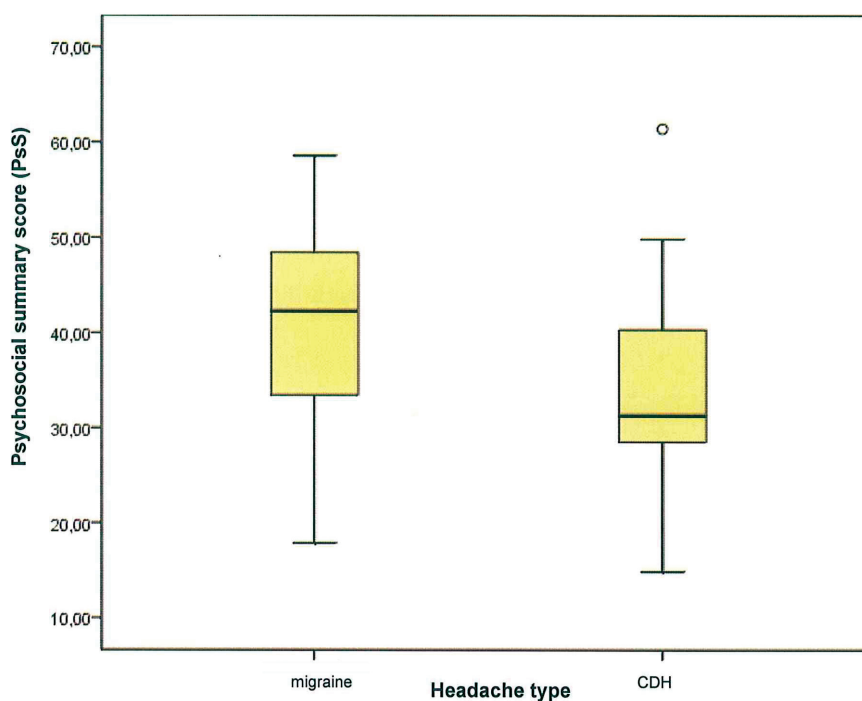


Figure 1. Box plot of migraine and Chronic Daily Headache children.

among CDH and migraine children. There is no recent bibliographical data regarding the comparison of the QoL of these children. The new and descriptive data that occurred from this comparison was that CDH had statistically significant **lower CHQ scores** than migraine children. In other words, the QoL of life of CDH children was lower than migraine ones. This was probably due to the frequency of CDH compared to migraine episodes. CDH children had more than 15 episodes per month while migraine children had 4 or less. As a conclusion, although the severity of migraine headaches is more intense and the clinical features of migraine (nausea, vomiting, physical limitations) more frequent than those of CDH, the fact that headache attacks are more frequent designates the significant difference in the QoL of these children.

The specific study consists a unique study in Greece and it shows the effect of migraine and CDH in QoL of children. Furthermore, it brings out the differences in specific aspects of QoL between CDH and migraine children. The grandness of this effect to the emotional, physical and psychosocial status of children, leads to the need for more surveys and new therapies in order

to improve the quality of life of these children. The avoidance of triggering factors of headache and the reasonable drug usage is an important initial step to this direction.

#### Abbreviations

*CDH: Chronic Daily Headache*

*QoL: Quality of life*

*CHQ - PF50: Child Health Questionnaire Parent Form 50*

*PsS: Psychosocial summary score*

*PhS: Physical summary score*

*PEDMIDAS: Pediatric Migraine Disability Assessment Score*

## **Ημικρανία και Χρόνια Καθημερινή Κεφαλαλγία: Η ποιότητα ζωής σε παιδιά σχολικής ηλικίας στην Βόρεια Ελλάδα.**

Μηνάς Κρεμενόπουλος, Ελευθέριος Κοντόπουλος

*Α' Παιδιατρική Κλινική ΑΠΘ, Ιπποκράτειο Θεσσαλονίκης*

**ΠΕΡΙΛΗΨΗ:** Οι πρωτοπαθείς κεφαλαλγίες εμφανίζονται με μεγάλη συχνότητα στην παιδική ηλικία. Η ημικρανία αποτελεί τη πλειοψηφία αυτών κι εμφανίζεται σε όλο το φάσμα της παιδικής ηλικίας. Η Χρόνια Καθημερινή Κεφαλαλγία αποτελεί τη νεότερη κατηγορία πρωτοπαθών κεφαλαλγιών και χωρίζεται σε 4 κατηγορίες. Ο σκοπός της μελέτης μας ήταν να υπολογιστεί η επίδραση των κεφαλαλγιών αυτών στην ποιότητα ζωής των παιδιών αυτών. 100 παιδιά με ημικρανία και 39 με Χρόνια Καθημερινή Κεφαλαλγία, 6 έως 14 ετών, μελετήθηκαν. Σε όλα πραγματοποιήθηκε νευρολογικός έλεγχος και επί ενδείξεων MRI και εργαστηριακός έλεγχος. Το CHQ - Parent Form50 είναι το ερωτηματολόγιο που χορηγήθηκε σε όλα. Το CHQ είναι ένα γενικό εργαλείο μέτρησης που εκτιμά την ψυχοκοινωνική, συναισθηματική και σωματική κατάσταση των παιδιών. Από το ερωτηματολόγιο αυτό, προκύπτουν 2 αθροιστικά score, ένα σωματικό και ένα ψυχοκοινωνικό, μέσω απαντήσεων 50 ερωτήσεων του CHQ από τους γονείς. Τα αποτελέσματα συγκρίθηκαν με αυτά 100 υγιών παιδιών. Σύμφωνα με τα αποτελέσματα της μελέτης, η ημικρανία και η Χρόνια Καθημερινή Κεφαλαλγία έχουν αρνητική επίπτωση σε όλες τις παραμέτρους της ποιότητας ζωής των παιδιών. Επίσης, τα παιδιά με Χρόνια Καθημερινή Κεφαλαλγία έχουν στατιστικά σημαντικά χαμηλότερα CHQ scores σε ορισμένες παραμέτρους της ποιότητας ζωής και αθροιστικά στην ψυχοκοινωνική υγεία, σε σύγκριση με τα παιδιά με ημικρανία.

*Λέξεις Κλειδιά:* Ημικρανία, Χρόνια καθημερινή κεφαλαλγία, Ποιότητα ζωής.

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