A SURVEY OF GREEK NEUROLOGISTS ON THE LIKEABILITY OF HEADACHES AND OTHER COMMON NEUROLOGICAL DISORDERS AND THE FAMILIARITY TO TREAT THEM.

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Abstract

Background. We sought to determine the degree of likeability and familiarity of board-certified Greek neurologists to treat migraine, cluster headache, trigeminal neuralgia and chronic daily headache, compared to other frequent neurological disorders and symptoms, as well as to assess the prevalence of headache disorders on themselves.

Methods. We surveyed 180 neurologists regarding their preference in treating headaches and other common neurological conditions. Their likeability and familiarity were evaluated based on the responses on a five-point Likert scale (ranging from 1, strongly disagree to 5, strongly agree) to two core statements: i) "I like to treat patients with this specific neurological disease/symptom" and ii) "I believe that I have a good level of familiarity/experience to treat patients with this specific disease/symptom". In addition, we also recorded the personal headache history of participants and their demographic data.

Results. The mean age of participants was 48.2 years and the average time since board certification was 14 years. The respondents preferred to treat migraine (mean=4.2) and expressed a good level of familiarity/ experience for it (mean=4.4) similar to Parkinson's disease (mean=4.2 for likeability and 4.1 for familiarity), trigeminal neuralgia (4.1 and 4.3, respectively) and stroke (4.1 and 4.2 respectively). Sleep disorders and obstructive sleep apnea were less liked (mean=3.1) and were ranked low in familiarity (mean= 3.2). The respondents' lifetime prevalence of migraine was 35%, and both those with and without migraines had comparable preferences for treating migraineurs.

Conclusions. Greek neurologists like to treat migraine, trigeminal neuralgia, stroke and PD, while they like much less to manage patients with sleep disorders.

Keywords: headache, migraine, cluster headache, survey, likeability, familiarity

ΜΙΑ ΜΕΛΕΤΗ ΣΕ ΕΛΛΗΝΕΣ ΝΕΥΡΟΛΟΓΟΥΣ ΓΙΑ ΤΗ ΠΡΟΤΙΜΗΣΗ ΣΤΗΝ ΗΜΙΚΡΑΝΙΑ ΚΑΙ ΑΛΛΕΣ ΣΥΧΝΕΣ ΝΕΥΡΟΛΟΓΙΚΕΣ ΠΑΘΗΣΕΙΣ ΚΑΙ ΤΗΝ ΕΞΟΙΚΕΙΩΣΗ ΤΟΥΣ ΜΕ ΑΥΤΕΣ

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 # Οι δύο πρώτοι συγγραφείς συμμετείχαν εξίσου στη δημιουργία αυτού του άρθρου

Περίληψη

Ιστορικό: Σε αυτή τη μελέτη αναζητήσαμε τον βαθμό προτίμησης και την εξοικείωση Ελλήνων νευρολόγων στην αντιμετώπιση ασθενών με ημικρανία, αθροιστική κεφαλαλγία, νευραλγία τριδύμου και χρόνια καθημερινή κεφαλαλγία σε σύγκριση με άλλες συχνές νευρολογικές παθήσεις και συμπτώματα. Επιπλέον διερευνήσαμε την συχνότητα των κεφαλαλγιών στους ίδιους τους συμμετέχοντες

Μέθοδοι: Ερωτήθηκαν μέσω διαδικτυακής έρευνας, 180 ειδικοί νευρολόγοι σχετικά με τις προτιμήσεις τους να αντιμετωπίζουν κεφαλαλγίες και άλλες συχνές νευρολογικές παθήσεις. Η προτίμηση και η εξοικείωσή τους αξιολογήθηκαν μέσω μιας πενταβάθμιας κλίμακας (με εύρος από 1: διαφωνώ έντονα έως 5: συμφωνώ έντονα) σε δύο βασικά ερωτήματα: α. Μου αρέσει να παρακολουθώ/θεραπεύω ασθενείς με αυτήν τη νόσο/σύμπτωμα και β. Θεωρώ πως έχω ικανοποιητικό επίπεδο εξοικείωσης και εμπειρίας για να παρακολουθώ και να θεραπεύω ασθενείς με αυτήν τη νόσο/σύμπτωμα.

Αποτελέσματα: Η μέση ηλικία των συμμετεχόντων ήταν 48.2 έτη και ο μέσος χρόνος από την απόκτηση του τίτλου ειδικότητας 14 έτη. Οι ερωτώμενοι έδειξαν προτίμηση στην αντιμετώπιση της ημικρανίας (μ.ο.=4.2) και εξέφρασαν ένα ικανοποιητικό επίπεδο εξοικείωσης με αυτήν (μ.ο.=4.4) σε επίπεδα παρόμοια με την νόσο του Parkinson (μ.ο. προτίμησης=4.2, μ.ο. εξοικείωσης=4.1), της νευραλγίας τριδύμου (4.1 και 4.3 αντίστοιχα) καθώς και των αγγειακών εγκεφαλικών επεισοδίων (4.1 και 4.2 αντίστοιχα). Αντιθέτως οι διαταραχές του ύπνου και το σύνδρομο απνοιών στον ύπνο είχαν μικρότερη προτίμηση (μ.ο.=3.1) με χαμηλή επίδοση και στην εξοικείωση (μ.ο.=3.2). Η συχνότητα της ημικρανίας στους συμμετέχοντες ήταν 35% χωρίς αυτό να φαίνεται να σχετίζεται με την προτίμηση στην αντιμετώπιση της νόσου.

Συμπεράσματα: Οι Έλληνες νευρολόγοι επιδεικνύουν προτίμηση στην αντιμετώπιση της ημικρανίας, της νευραλγίας τριδύμου, της νόσου του Parkinson και των αγγειακών εγκεφαλικών επεισοδίων σε αντίθεση με τις διαταραχές του ύπνου.

Λέξεις ευρετηρίου: κεφαλαλγία, ημικρανία, αθροιστική κεφαλαλγία, έρευνα, προτιμήσεις

1. Introduction

Primary headaches are among the most prevalent neurological disorders encountered in routine clinical practice. It is estimated that around 12% of the general population in western countries and nearly 18% of women of reproductive age experience migraines [1, 2]). The Global Burden of Disease Study 2019 lists migraine as one of the top causes of impairment as assessed by years lived with disability (YLD). Combined with medication overuse headache, migraine ranks in the top three of leading causes of disability, worldwide (3, 4).

Migraine, tension type headache (TTH) and cluster headache (CH) collectively represent the most commonly seen primary headache disorders. Chronic daily headache, a term most often used to describe patients with chronic migraine who also overuse medications for headache attacks, is a debilitating condition and usually requires a specialized multidisciplinary treatment approach. Trigeminal neuralgia (TN), although not typically categorized and diagnosed as a headache, is a neurological disorder not uncommonly encountered in clinical practice and responsible for some of the most serious cases of cephalic pain a neurologist may have to manage (5). Previous studies found that the prevalence of migraine is higher in neurologists than the general population (6).

Despite its high prevalence, migraine remains largely underdiagnosed and undertreated. In a survey of more than 2100 migraine patients, conducted by the Greek Society of Migraine and Headache Patients, almost 25% admitted never having visited a physician and formally been diagnosed with migraine (7, 8). In the general population, the percentage of undiagnosed migraineurs has been estimated to be even higher. According to a systematic review and meta-analysis, only 45.9% of individuals with migraine have received a definite diagnosis from a neurologist or a headache expert (9). There is also evidence to suggest that among a sample of US adults with severe headache or migraine symptoms, only 51.3% have received a medical diagnosis of migraine or probable migraine (10). These studies clearly demonstrate that a significant proportion of individuals with migraine may remain undiagnosed. Neurologists are the key physicians involved in the diagnosis and treatment of migraine patients. In the aforementioned survey of the Greek Society of Migraine and Headache Patients (7, 8), more than 87% of diagnosed patients reported they received the diagnosis by a neurologist. In addition, almost 89% of those who had visited a

physician for their migraines during the past months, had seen a neurologist. These data fully support the opinion that in Greece the diagnosis and treatment of migraine patients relies mostly on the expertise of neurologists, while it would be expected, because of its high prevalence, that a large proportion of migraine patients would be managed by primary care physicians.

Anecdotally, neurologists are thought to dislike treating migraines and headaches in general. However, there is evidence that among neurologists and headache medicine specialists in the US, migraine is among the preferred disorders to treat (6, 11). Multiple research studies investigated how neurologists can help people with migraines, and thoroughly advocated in favor of the view that patients with migraine who consulted neurologists had better results in regards to headache-related disability and quality of life than those who were followed by non-specialists (12). Another study demonstrated that when compared to patients who were not treated by headache specialists, including neurologists, those who received treatment from headache specialists were more likely to receive appropriate care and have better outcomes (13). Nonetheless, it remains challenging to determine whether the preference of neurologists to treat or not treat migraine has an impact on treatment efficacy.

We here sought to investigate the likeability of headache disorders and the familiarity to treat them by Greek neurologists and compare it to that of other neurological conditions. We also aimed to elucidate possible correlations between likeability/familiarity of headaches with the personal headache history or other demographic characteristics.

2. Methods

A structured web-based 44-item questionnaire in Greek was created using the "Google forms", an online instrument widely used to create online forms and surveys. A call for participation was distributed via personal email invitations sent from the Hellenic Neurological Society to all registered board-certified neurologists in Greece. A reminder was sent ten days after the initial email. Survey was open for participation for a total period of three weeks in March 2023. The survey was not otherwise promoted or released, i.e., through social media or in print mail. The questionnaire was created by consensus by members of the Headache Scientific Panel of the Hellenic Neurological Society and included items about basic demographic characteristics such as age, gender, occupational status of participants, their personal history of any type of headache disorder, according to the ICHD-III criteria (5), as well as questions concerning their likeability and familiarity to treat headaches and other common neurological disorders.

The likeability and familiarity were evaluated based on the responses on a five-point Likert scale (1: strongly disagree, 2: disagree, 3: neither agree nor disagree, 4: agree, 5: strongly agree) to two core statements: i) "I like to treat patients with this specific neurological disease/symptom" and ii) "I believe that I have a good level of familiarity/experience to treat patients with this specific disease/symptom". Common neurological diseases and/or symptoms including different types of headache disorders were listed in alphabetical order. Namely, questions about both likeability and familiarity concerned the following neurological diseases/symptoms: dementia/ Alzheimer's disease (AD); epilepsy; dizziness/vertigo; Parkinson's disease (PD); essential tremor (ET); sleep disorders/ obstructive sleep apnea (OSA); Neck/ back pain - radiculopathy; multiple sclerosis (MS); myasthenia gravis (MG); functional disorders; restless leg syndrome (RLS); stroke; peripheral neuropathies; trigeminal neuralgia (TN); chronic daily headache (CDH); cluster headache (CH) and migraine. The latter neurological diseases/symptoms that were studied for the purposes of our survey, were similar to the set of disorders and symptoms which were included in previously published similar surveys reporting the likeability of neurologists and headache specialists in the USA to treat headaches and other neurological disorder (6, 11). The clinical experience in the relevant categories of migraine and cluster headache was evaluated by the number of treated patients with the specific disorder in a given time period. Considering the different prevalence between migraine and cluster headache, patients treated within an average month was the criterion for migraine, while patients treated within a year for cluster headache.

This online survey was conducted in accordance with the requirements of the Declaration of Helsinki and its amendments. Neither ethics approval nor written informed consent from participants was asked before launching this survey, because provision of written information about the study along with the questionnaire and voluntary participation provided implied consent for questionnaire-based investigations. Participants answered the research questions anonymously. Email addresses or any other type of personal information were not collected through the survey.

Statistical analysis

Data extracted from the questionnaires were analyzed according to basic descriptive statistics generating categorical variables (observed counts and weighted percentages) and continuous variables (mean or median with the corresponding standard deviation or range). Comparisons between ordinal variables (likeability and familiarity of neurological

disorders) and continuous variables (age, time since board certification) were made with linear regression analysis of variance, while comparisons with categorical (binary) variables (gender, employment status) were made with the Mann-Whitney U test. Statistical analysis was performed using the SPSS for Windows (IBM SPSS Statistics for Windows, Version 24.0, Armonk, NY: IBM Corp.). The level of significance was set at the $P < 0.05$ level.

3. Results

One-hundred eighty (male=85, female=93, unknown=2) board-certified neurologists from the entire country responded to the invitation and completed the questionnaire. The mean age was 48.2 years (SD= 8.6) and the mean time interval since board certification was 14 years (SD=9.6; range: 0-47). All participants (n=180) were practicing clinical neurology, while 39 (22%) and 45 (25%) were also involved in neurological education and research, respectively. As can be seen in **T**able 1, 95 (53%) of participants worked in the private sector, either in private office practice (n=81) or private hospital (n=14) and the remaining 85 (47%) of participants worked in the public sector, either in a public hospital (n=62) or a university hospital (n=23).

Table 1. Demographic characteristics

Age	
mean (SD), years	48.2 (8.6)
Gender n (%)	
Male	85 (47.2%)
Female	93 (51.7%)
Not stated	2 (1.1%)
Time since board certification	
mean (SD; range), years	14 (9.6; 0-47)
Type of practice n (%)	
Clinical neurology	180 (100%)
Education	39 (21.7%)
Research	45 (25%)
Basic employment status n (%)	
Private practice (office)	81 (45%)
Private practice (hospital)	14 (7.8%)
Public hospital/medical center	62 (34.4%)
University clinic (public)	23 (12.8%)
Personal headache history n (%)	
Migraine	62 (24.4%)
TTH	28 (15.6%)
CH	3 (1.7%)
Migraine and TTH	10 (5.6%)
Migraine, TTH and CH	1 (0.6%)

The clinical experience of responders in treating common headache disorders as it was expressed by the median number of patients treated per month was 10 for migraine (range: 0-120, mean: 14) and 10 for TTH (range: 0-80, mean:13). The median number of patients with a CH diagnosis treated per year was 2 (range: 0-50, mean: 3.7). Using the median values as cut-offs of frequent vs infrequent daily routine practice, it was evident that 80 (44%) participants had an infrequent routine with migraine patients (i.e., less than 11 patients per month), 64 (36%) with TTH patients and 47 (26%) an infrequent routine with CH patients (i.e., less than 2 per year). It should be noted that 10/180 participants reported seeing zero CH patients per year and 37/180 seeing 1 patient with CH per year. A total of 46% of responders stated that they're modestly informed about the novel treatment choices for migraine, i.e., anti-CGRP monoclonal antibodies and gepants, while their preferable source of information about novel treatment data was reading high-quality scientific papers (71%) and attending neurology/headache conferences (66%).

Overall, the most likeable disorder was migraine (mean 4.24) followed by PD (mean 4.21) and TN (mean 4.11), while the least likeable disorders were sleep disorders/obstructive sleep apnea (mean 3.14) and functional disorders (mean 3.16). Similarly, in terms of familiarity and confidence in treating, migraine and TN scored higher (mean=4.35 and 4.27 respectively), than any other neurological disorder/symptom. Tables 2 and 3 present the overall likeability and familiarity of treating headache disorders and other common neurologic disorders.

Table 2. Likeability in treating headache disorders and other common neurologic disorders

Neurologic disorder	Likeability		Correlations					
	overall (mean/ SD), n=180	Male(n=85)/ female (n=93) (mean)	Gender ¥	Age #	Time since board certification #	Clinical experience (patients/mont) #	Basic employment status (public – private sector) ¥	Personal history of headache ¥
Dementia/Alzheimer's Disease	3,8 / 1,2	3,8/3.7	0.27	0.088/0.2	0.063/0.4		0.003*	
Chronic daily headache	3,7 / 1,1	3,8/3.6	0.26	0.066/0.38	0.017/0.82		0.009*	
Cluster Headache	3,9 / 1,1	4,0/3.8	0.28	0.052/0.49	0.126/0.094	0.165/0.027* (B= -0,49)	0.54	0.49
Dizzines/vertigo	3,3 / 1,2	3,2/3.3	0.68	0.239/0.01*	0.20/0.007*		0.00*	
Epilepsy	3,7 / 1,1	3,6/3.7	0.31	0.054/0.48	0.043/0.56		0.24	
Essential tremor	3,9 / 0,9	3,9/3.8	0.38	0.012/0.87	0.009/0.91		0.07	
Sleep disorders/OSA	3,1 / 1,1	3,2/3.1	0.94	0.03/0.69	0.020/0.79		0.002*	
Neck pain/nack pain/ radiculopathy	3,4 / 1,1	3,3/3.5	0.77	0.246/0.001*	0.207/0.005*		0.00*	
Migraine	4,2 / 0,9	4,2/4.2	0.27	0.096/0.2	0.052/0.49	0.272/0.00*	0.31	0.08
Multiple sclerosis	3,8 / 1,1	3,7/3.9	0.55	0.007/0.93	0.004/0.96		0.13	
Myasthenia	3,8 / 1,1	3,6/4.0	0.95	0.018/0.81	0.024/0.75		0.04*	
Trigeminal neuralgia	4,1 / 0,9	4,2/4.0	0.41	0.092/0.218	0.161/0.032*		0.24	
Parkinson's disease	4,2 / 0,9	4,2/4.2	0.55	0.057/0.447	0.051/0.49		0.018*	
Functional disorders	3,2 / 1,3	3,2/3.1	0.96	0.224/0.003*	0.211/0.005*		0.001*	
Restless leg syndrome	4,0 / 1,0	4,1/4.0	0.49	0.032/0.67	0.038/0.61		0.005*	
Stroke	4,1 / 1,0	4,2/3.9	0.22	0.132/0.077	0.127/0.090		0.58	
Peripheral neuropathy	3,7 / 1,0	3,6/3.8	0.71	0.027/0.87	0.012/0.876		0.71	

* statistically significant (p<0.05) # regression analysis R/p-value ¥ Mann-Whitney U p-value

Table 3. Familiarity of treating headaches and other common neurologic disorders.

Neurologic disorder	Familiarity		Correlations					
	overall (mean/ SD), n=180	Male(n=85)/ female (n=93) (mean)	Gender ¥	Age #	Time since board certification #	Clinical experience (patients/ month) #	Basic employment status (private – public sector) ¥	Personal history of headache ¥
Dementia/Alzheimer's Disease	4,1 / 1,0	4,2/4.1		0.139/0.06	0.113/0.13		0.00*	
Chronic daily headache	4,0 / 1,0	4,2/3.9		0.123/0.10	0.061/0.42		0.042*	
Cluster headache	3,8 / 0,9	3,9/3.8		0.124/0.10	0.054/0.47	0.148/0.048* (B=-0.51)	0.054	0.338
Dizzines/vertigo	4,0 / 0,9	4,0/4.0		0.062/0.41	0.028/0.71		0.033*	
Epilepsy	3,7 / 1,0	3,7/3.7		0.045/0.55	0.052/0.49		0.56	
Essential tremor	4,2 / 0,8	4,1/4.2		0.059/0.43	0.061/0.42		0.001*	
Sleep disorders/OSA	3,2 / 1,1	3,2/3.2		0.094/0.21	0.089/0.23		0.00*	
Neck pain/back pain/radiculopathy	3,8 / 0,9	3,7/3.9		0.230/0.002*	0.198/0.008*		0.002*	
Migraine	4,4 / 0,8	4,3/4.4		0.132/0.08	0.096/0.20	0.257/0.00*	0.82	0.51
Multiple sclerosis	3,8 / 1,1	3,7/3.8		0.109/0.15	0.096/0.20		0.52	
Myasthenia	3,8 / 1,0	3,7/4.0		0.106/0.15	0.148/0.48		0.73	
Trigeminal neuralgia	4,3 / 0,8	4,4/4.2		0.106/0.16	0.063/0.40		0.006*	
Parkinson's disease	4,1 / 0,9	4,1/4.1		0.118/0.11	0.122/0.10		0.00*	
Functional disorders	3,7 / 1,1	3,7/3.7		0.130/0.08	0.111/0.14		0.001*	
Restless leg syndrome	4,1 / 0,9	4,2/4.0		0.032/0.68	0.017/0.82		0.00*	
Stroke	4,2 / 1,0	4,4/4.0		0.125/0.09	0.142/0.57		0.56	
Peripheral neuropathy	3,9 / 1,0	3,8/3.9		0.123/0.10	0.134/0.07		0.12	

* statistically significant (p<0.05) # regression analysis R/p-value ¥ Mann-Whitney U p-value

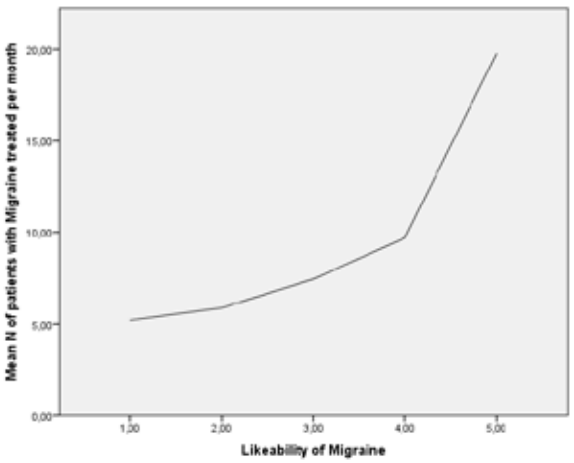

Figure 1. Linear correlation of likeability of migraine and mean number of treated migraine patients per month

The likeability and familiarity of treating patients with migraine showed a significant positive correlation with the mean number of migraine patients treated per month ($p<0.05$), as shown in Figure 1. An interesting finding to highlight is that the responders who reported the greatest likeability and familiarity of treating CH patients had the least experience, as both likeability and familiarity to CH had a significant negative correlation with the mean number of treated CH patients per year ($p<0.05$, $B<0$) (Figure 2).

A total of 82 responders (45.6%) had a personal history of at least one primary headache disorder, including migraine, TTH, and CH , with corresponding prevalence among the responders of 35%, 16% and 2%, respectively. Nonetheless, this history was not found to be related with either the likeability or familiarity to the respective disorders [Table 2-3].

The likeability of treating dizziness/vertigo, neck pain/back pain and functional neurological disorders were found positively correlated with the mean age of the participants and time since board certification (ANOVA, $p<0.05$) . However, as time goes forward since the year of obtaining the board certification, responders seem to be more familiar with treating TN patients (p value<0.05) but it became less likeable (negative linear correlation, $p<0.05$). On the contrary, there was no significant correlation between likeability and familiarity for migraine and other headache disorders and the age of participants and years since board certification (Table 2 – 3).

Finally, significant correlations were found for the likeability of treating dementia/AD, CDH, dizziness/vertigo, sleep disorders/OSA, neck pain/back pain, MG, PD, functional disorders and RLS patients and neurologists working in the private sector compared to those in the public sector [Table 2]. The same employment status was found to be significantly correlated with the familiarity of treating dementia/AD, CDH, dizziness/vertigo, ET, sleep disorders/OSA, neck pain/back pain, TN, PD, functional disorders and RLS patients [Table 3].

4. Discussion

We have recently reported on the likeability of Greek primary care physicians to treat migraine, compared to other common neurological and general medical disorders and found that participants disliked totreat migraine, but also other neurological diseases (14). These findings were consistent with those of a similar survey in US primary care physicians (15). Hence, we considered that it would be interesting to test whether the same negative attitudes towards likeability to treat migraine and other headaches were also applicable to board-certified Greek neurologists.

Contrary to anecdotal previous beliefs, our data demonstrate that migraine and trigeminal neuralgia are among the most liked-to-treat conditions by neurologists, at the same level as PD, stroke and RLS, while cluster headache and chronic daily headache are among the conditions neurologists seem to

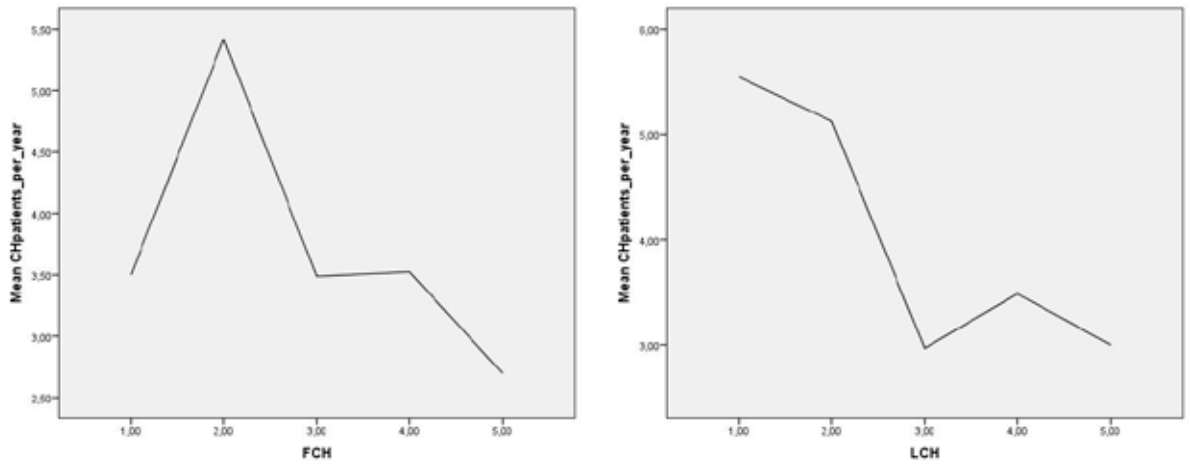

Figure 2. Familiarity (FCH) and likeability (LCH) to CH had a significant negative correlation with the mean number of treated CH patients per year.

moderately like to treat. In contrast, sleep disorders/OSA, functional neurological disorders, neck pain/back pain/radiculopathy were less liked-to-treat. Moreover, migraine and trigeminal neuralgia are among the conditions that Greek neurologists feel familiar and experienced to treat, along with stroke, PD, AD, RLS and ET, while sleep disorders, functional disorders, neck back pain, epilepsy and cluster headache scored low, comparatively. Our findings are in agreement with the results of a similar survey in 94 neurologists in the USA, wherein the most likeable disorders (mean response >4 in a 5-point Likert scale) were PD, ET, RLS, stroke, migraine, epilepsy and carpal tunnel syndrome [6]. Similarly, in our survey migraine, PD, RLS and stroke also had a mean response >4 in the 5-point Likert scale followed by TN which was not surveyed in the previous study. Carpal tunnel syndrome was not surveyed in our study; thus, the only difference is the likeability of epilepsy. It could be hypothesized that high likeability and familiarity to treat migraine may have been augmented, at least in part, by the relatively recent introduction of injectable therapies, specifically targeting the calcitonin gene-related peptide (CGRP) or its receptor (anti-CGRP/CGRPr MAbs), which have revolutionized the prophylactic treatment of migraine (16), and have become the focus of systematic continuous medical education efforts.

The prevalence of migraine among Greek neurologists was 35%; a percentage significantly higher compared to both the estimated prevalence in the general Greek population, i.e., 8.1% (17) and the estimated global migraine prevalence, i.e.,14-15% (4). This high prevalence of migraine in our participants is similar to the findings of other studies exploring the prevalence of migraine among neurologists and demonstrated that migraine can occur at rates between 35% to 69.5% (18, 19). In the study by Evers et al, 7.7% of the neurologists and 23.5% of headache specialists reported that their personal history of migraine had an influence on their decision to choose this specialty. Since no obvious pathogenetic explanation to account for this high prevalence of migraine among neurologists, we can suggest that the latter could be an explanation. On the other hand, it has been proposed that the more accurate self-diagnosis of neurologists may result in a more precise estimation of the true prevalence of the disorder compared to the general population (20).

Focusing on the data for cluster headache, there are a few points worth addressing. Overall, respondents reported that they like to treat CH patients (mean=3.9) and feel familiar and confident to do so at corresponding level (mean=3.8). Although in our sample we used the median number of patients seen per year as cut-off for frequent vs. infrequent clinical experience, it could be argued that a reasonably sufficient clinical experience would rather be proved by seeing a larger number, at least one CH patient per month, on average. Using this scenario, only 21 out of 180 respondents would be considered as having sufficient clinical experience. In addition, one interesting finding was that those reporting the greatest likeability and familiarity with treatment of CH patients had the least routine experience, as shown by the significant negative correlation between both likeability and familiarity to CH with the mean number of treated CH patients per year, which raises further questions as to whether the confidence to treat is based on solid grounds. The latter point may be supported by previously reported data from Greece, where serious concerns on the efficacy of CH diagnosis and treatment, even by neurologists, were raised (21). In this paper, 40% of newly diagnosed CH patients had seen a neurologist in the past, without receiving the CH diagnosis. Treatment recommendations by neurologists were also problematic, as only 3.4% of CH patients diagnosed by a neurologist were prescribed with SC sumatriptan and 20% were prescribed verapamil, while the use of unsubstantiated treatments like flunarizine, carbamazepine and SSRIs was common.

In the current survey, we have not assessed whether the high likeability and familiarity to migraine or other headache disorders by board-certified neurologists can affect patient satisfaction and management and this may be a limitation of our study.

5. Conclusion

Despite a long-standing anecdotal point, neurologists like treating migraine, trigeminal neuralgia, and also more difficult-to-treat headache disorders, such as CH. Further studies are warranted to correlate the likeability and familiarity of diagnosis and treatment of headaches and other neurological disorders by neurologists with patient satisfaction and management, and to reveal the specific factors leading to an increased or decreased likeability of neurologists to treat headaches.

6. Conflict of Interest

M.V. has received investigator fees and/or advisory board member and/or consultancy and/or travel grants from Allergan-Abbvie, Elli- Lilly, Lundbeck, Novartis, Pfizer, Teva. DR has received educational and/or travel grants from, Allergan-Abbvie, Pharmaserv-Lilly and Pfizer. G.S.V. has received investigator fees from Amgen, Novartis, Abbvie, Eisai, Teva, and Lundbeck. A.A.A. has received investigator fees and/or advisory board member and/or consultancy and/or travel grants from Allergan-Abbvie, Novartis, Eli-Lilly, Pfizer and Teva. E.V.D. has received investigator fees and/or advisory board member and/or consultancy and/or travel grants from Allergan-Abbvie, Novartis, Teva, Eli-Lilly, Tikun and Pfizer. G.X. has received investigator

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