Population and Needs Assessment of Migraineurs Treated by Reading Health System

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Introduction

Migraine headaches are a common chronic condition that contributes to a significant amount of disability[1] and economic burden[2]. The prevalence of migraine headache is high, affecting nearly 1 in 7 Americans, and headache and migraine are considered among the most common reasons for Emergency Department (ED) and primary care office visits[3]. The cost of migraine treatment in the US could be as high as $17 billion annually[4]. It is estimated that the cost of an ED visit for migraine is over 5 times the cost of an office visit for migraine and a hospitalization for migraine is up to 50 times the cost of an office[5].

Having recognized the growing financial constraints placed on the ailing US healthcare system that produces relatively poor[6], the Institute for Healthcare Improvement has developed the Triple Aim Initiative (www.IHI.org). This represents a framework to optimize health system performance by focusing on three dimensions; (1) patient experience of care, (2) improving health of populations and (3) reducing per capita cost of health care[7]. This descriptive study represents our first step in a multidimensional plan to help the Reading Health System (RHS, located about 60 miles west of Philadelphia, PA) approach the goals of the Triple Aim with respect to the treatment of chronic migraine by first, identifying the population of interest.

Through this study, we aim to identify the subset of the chronic migraine population that is utilizing the ED for headache treatment as seen in Figure 1. We focused on features of this population that will guide the selection of future strategies to meet the specific needs of the chronic migraineur of our health system. The chronic migraineur is likely a subset of the migraine population that represents the high-resource utilizers in our health system.

Figure 1: Reading Health System, Reading, PA

Methods

- Retrospective chart reviews of men, women, and children presenting to the Emergency Department at the Reading Hospital in Reading, Pennsylvania with migraine headache from 7/2017 to 2/2018.
- Potential subjects were selected based on a review of their current visit by means of Epic electronic medical record. If appropriate, once patients had been evaluated by a physician and the necessary testing to rule out secondary headaches was performed, a research team member would approach the patient, obtain consent, and conduct a standard, one page interview.
- Questioning took approximately ten minutes and involved their current headache, headache history, migraine medications, and past medical history. Subjects who could not be interviewed in person were called for interviews via telephone.
- All interviewed subjects were asked the same set of standard questions by a single interviewer. There were three research team members assigned to conduct interviews over the course of this study.
- Data was collected manually and then sorted and evaluated electronically using programs such as Numbers, Microsoft Excel, and Powerpoint.
- The data was further divided into patients who considered themselves chronic migraine suffers or met the criteria found in the International Headache Society classification for chronic migraines[8].

Setting

Study took place in the ED of Reading Hospital in Reading, PA

Figure 1: Reading, Pennsylvania located about 60 miles west of Philadelphia, Pennsylvania[9].

Results

The time frame of collection was July 5, 2017 to February 21, 2018. A total of 92 patients who presented to the RHS ED were surveyed either in-person or via telephone. We found that the patients presenting to RHS for a headache ranged from the ages of 14-81 years, with the majority 81/92 (88.04%) being females. Of the 92 patients interviewed, 68 patients (73.9%) were found to be either chronic according to the HIS classifications or by identifying themselves as chronic migraine sufferers.

Results (cont)

Of the 68 CM patients, 7/68 (10.3%) were male and 61/68 (89.7%) were female. Ages ranged from 16 – 81 years old with a mean age of 37.63 years old. Regarding medications, 19/68 (27.9%) were on a prophylaxis medication. Out of the 19 patients, 12/19 (90.9%) were on Topiramate. Regarding this specific ED visits, of the 68 chronic migraine patients, 14/68 (20.6%) did not take medication to relieve their headache prior to arrival and 29/68 (42.6%) contacted a care provider before arriving. Out of the 29 patients who contacted a care provider, 19/29 (65.5%) were instructed to go to the ED for their migraine.

Patients were asked what type of provider treats their migraines. Out of the 68 CM patients, 20/68 (29.4%) are treated by a Neurologist, 28/68 (41.1%) by a primary care provider, and 20/68 (29.4%) do not have a care provider who treats their migraines.

Also of note, out of the 68 CM patients who presented to the RHS ED, 47/68 (69.1%) reported to have either anxiety, depression, or bipolar disorder.

To evaluate general socioeconomic status, home zip codes were used to assess median income levels. The results demonstrated trends of greater numbers of ED visits associated with that of lower income areas. Please refer to Table 1 for a summary of significant results and Figure 2 for a graph comparing average household income and number of patients presenting to the ED..

Table 1

CHRONIC MIGRAINE PATIENTS	68/92 (74%)
MALE/FEMALE	7 male, 61 female
AGE RANGE	16-81 years (mean 37.63 years)
2 OR MORE ED VISITS IN THE LAST YEAR	35/68 (51%)
5 OR MORE ED VISITS IN THE LAST YEAR	16/68 (24%)
NUMBER NOT ON PROPHYLACTIC TREATMENT	49/68 (72%)
NUMBER ON TOPIRAMATE AS PROPHYLAXIS	12/19 (63%)
DID NOT TAKE ANY MEDICATION PRIOR TO ED VISIT	14/68 (21%)
CONTACTED A CARE PROVIDER PRIOR TO ED VISIT	29/68 (43%)
INSTRUCTED TO GO TO ED AFTER CONTACTING PROVIDER	19/29 (66%)
ANXIETY, DEPRESSION OR BIPOLAR DISORDER	47/68 (69%)
TREATED THROUGH NEUROLOGY SERVICE	20/68 (29%)
TREATED THROUGH THEIR PCP	28/68 (41%)
DO NOT HAVE CARE FOR THEIR MIGRAINE	20/68 (29%)

Figure 2

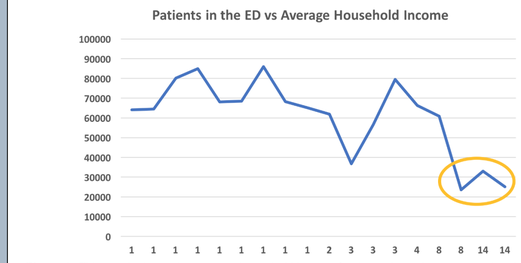

Figure 2: This graph shows the average household income for the patients that presented to the RHS ED. Average income is shown on the Y axis and number of patients presenting from the associated zip code is on the X axis. The average household income was generated using the zip code of the patients and a US Census Bureau website[9].

Conclusion

Patients with CM make up the majority of headache visits at the RHS ED. The CM population of the RHS are underserved and undertreated and the lack of access to appropriate care is likely contributing to unnecessary ED visits. Psychiatric comorbidities are common in RHS CM population as well. Socioeconomic factors PROBABLY contribute to the frequency of ED visits by this population, however there are likely complicated confounding factors such as age distribution and other factors that were not accounted for in this small descriptive study.

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