**A cross -sectional study to assess the prevalence, perception of causes of headache and treatment seeking behaviour among nursing personnel at government tertiary level health care facility in northern India**

**ABSTRACT**

**Introduction**: Headache disorder is experienced by everyone at least once in lifetime irrespective of age, gender, race or socioeconomic factors. Healthcare worker is a person who delivers required care to sick or unwell people. Nurses are the one who are in direct contact with the patient and provides autonomous and collaborative care to individual in health care setting. The type of headache varies depending upon origin, severity, frequency, location and type of pain. Multiple factors can trigger headache and nursing personnel have plenty factors in their environment. Headache is an ill managed and under diagnosed condition.

**Objective**: The objective of the study is to assess the prevalence, perception of cause of headache and treatment seeking behaviour among nursing personnel of PGIMER, Chandigarh during 2020-21.

**Method**: Cross sectional study was done on nursing personnel of PGIMER and 300 subjects from all over the hospital were enrolled by stratified proportionate randomization. San indigenous tool was made and was hand distributed to collected data related to sociodemographic, job profile, health profile, headache characteristics, perceived causes, sleep, stress and treatment seeking behaviour. Stress was assessed using PSS and for sleep JSES was used. Ethical clearance was taken and informed written consent was taken

**Result:** Out of 300 nursing personnel 83.45% were female and 18.6% were male, with mean age 33.53 years. Nearly 85% of them had less than 10years of experience in PGIMER. The 6-month prevalence of headache in nursing personnel was 70%, 49% were having TTH and 26% with migraine. Female predominance was significantly observed in our study. Years of experience in PGIMER had positive co-relation with headache and factors such as sleep and stress had significant association with headache. Episodic nature of headache was in 51% with characteristics like mean severity, daily duration and monthly frequency to be 4.31, 1.69hrs/day and 6-8days/month. Location of headache was forehead in 29% with type of pain throbbing in 25.3%. Nearly 80% of subjects were impacted by headache, while only 30% did seek treatment. Neurologist was consulted by 75.8% and complementary and alternative medicine therapies by 64.5%. Caffeine to relieve pain was used by 40%. Over-the-counter and prescribed drug for acute headache was Paracetamol (53.7%) and Tab naproxen was prescribed in 41.8% and 9.6% of nursing subject for acute and chronic headache.

**INTRODUCTION**

Headache is unfortunately one of the most common physical problems that human experience. Headache consists of pain or discomfort arising from pain sensitive structure in the head. This includes extra cranial structures such as skin, muscles and blood vessels in the head and neck, mucosa of the sinuses, dental structure and intracranial structure including the reason of the large arteries near the circle of Willis, the great intra cranial venous sinuses, parts of the dura and dural arteries and cranial nerves.[4] The prevalence of it can be seen worldwide and it affects both genders fairly, all ages, races, socioeconomic statuses and geographical areas. A healthcare worker is one who delivers care and services to the sick and ailing either directly or indirectly but due to the nature of their job, it is not surprising that headache disorders are very much prevalent among health care workers [1]. Headache one experience impedes work and can greatly affect day to day activities. Therefore, it is necessary to identify the nature of headache and the extent of disability it causes, so that appropriate strategies can be developed to enhance their work functioning which will eventually benefit the health care delivery system. The International Headache Society (2018) has classified more than 150 types of headaches further than 150 divided into primary and secondary headache disorders [4]. The primary headache group consist tension type headache (most common headache), migraine and cluster headache. The secondary headache group consists of cervicogenic headache, post traumatic headache syndrome, medication overuse headache, sinuses headache and various causes are brain tumour, brain aneurysm, dehydration, concussion, COVID 19, intracranial hematoma, meningitis, hypertension etc. Headache can be chronic, acute or episodic. The triggering factors for a headache are stress, disturbed sleep pattern, altered eating habits or certain food, usage of oral contraceptive, changing weather conditions and temperature variations in the environment and frequent travelling.[5] The various associated symptoms related to headache are light headedness, sensory disturbance, nausea, increase sensitivity to light and sound, pain around one eye, restlessness, reduce sleep quality and neck pain. In general population mainly home remedies and tab paracetamol are preferred for the treatment of headache.

The headache prevalence, risk factors and treatment seeking behaviour among nurses need to be assessed as there is possibility of high prevalence of headache among nurses due to lot of work stress /work load and presence various risk factors of headache. According to the Wei Xei study it was found that tension type headache is more common in health care personnel. The healthcare worker doesn’t give much attention to headache, due to the busy schedule of their job. Along with this they also have a tendency of self-treating which further leads to diagnostic delay of real pathological reason.[6] It is found in previous study that Complementary and alternative therapies were also used by some of the nursing personnels which included massage therapy, homeopathy, physiotherapy, nutrition therapy, naturopathy, acupuncture and herbal therapy.[30] Whereas those who sought medical attention, most of them don’t follow any proper channel.[28]

As there is not much availability of data related to headache among nursing personnel and the present scenario of pandemic also increased the physical and mental burden over the whole healthcare system and nursing personnel are also impacted due to it. There are various triggering factors like use of PPE, heavy workload, changing shift duties, constant public dealing, skipped meals, change in sleep pattern and alarming sounds, etc. which makes job more challenging for nurses. All these issues enlighten the need to conduct the study in order to obtain more clear view over the prevalence, perception, characteristics and treatment seeking behaviour among nursing personnel.

**METHODOLOGY**

**Study population-** This research took place in premium tertiary care institute of north India. This was planned as cross-sectional research study in 300 subjects, out of which 247 were female and 53 were males. To calculate sample size, we took confident level to 99%, margin error to be 5% and population proportion to be 85% according to literature review on prevalence of headache in nurses in India.[8] The sample was selected using by stratified random sampling. The accessible population was nursing population. The inclusion criteria were nursing personnel who consented to participate and were present at the time of data collection. The exclusion criteria were nursing personnel who were absent or at leave and posted in COVID area during the time of data collection.

**Administration of questionnaire-** The study was conducted using an indigenously developed questionnaire that consist of subject profile sheet, headache profile checklist that consist headache onset related history, characteristics of headache, factors associated with headache, perceived stress scale, Jenkins sleep evaluation scale, headache impact test-6, were analyzed with standardized scoring and treatment seeking behaviour. The questionnarie was translated and validated by experts. It was administered by handing the questionnarie to the intended population and collected the day after to maintain the uniformity and privacy of the data collected. The inter-observer reliability of the tool was ensured as all 5 researchers were well trained to administer the questionnaire by the guide, co-guide and the neurologist related to the study.

**Anonymization and consent-** The researcher explained the study to the potential study subjects, consent was obtained via a consent form and the confidentiality was maintained and subjects were ensured that the data would be used for the therapeutic purpose and not for any personal use. The subjects can withdraw themselves from the study any time.

**Ethical consideration**- Approval from Ethics Committee of NINE, Consent from MS, Consent from ANS, informed written consent from study participants, participant information sheet to study participant.

**Statistical Analysis-** Statistical package for social sciences (SPSS) software program was used for statistical data processing. Methods of descriptive and inferential statistics that includes mean, median, mode, standard deviation, chi-square test and Mann Whitney test was used for analyzing data. Analyzed data was presented with the help of tables, graphs and pie charts.

|  |  |  |
| --- | --- | --- |
| **Variables** | **f(%)** | |
| **Gender**  Male  Female | 53 (17.6%)  247 (83.45%) | |
| **Age (in years)**  >25 C:\Users\hp\AppData\Local\Temp\ksohtml1556\wps1.png  26-35  36-45  46-55 | 113 (37.7%)  120 (40%)  52 (17.3%)  15 (5%) | |
| **Marital Status**  Married  Unmarried  Widowed  Divorced | 196 (65.3%)  99 (33%)  3 (1%)  2 (0.7%) | |
| **job profile** | **f(%)** | |
| **Designation**  Assistant nursing superintendent  Senior nursing officer  Nursing officer | 5 (1.6%)  41 (13.7%)  254 (84.7%) | |
| **Total experience in (in years)**  <10  10-20  >20 | **Nursing profession**  180 (60%)  86 (28.6%)  34 (11.4%) | **present institute**  194 (64.7%)  77 (25.6%)  29 (9.7%) |
| **Night duties per month (in days)**  <3  3-6  >6 | **(n = 281)**  51 (18.14%)  189 (67.25%)  41 (14.6%) | |
| **Gap between night duties (in days)**  <10  11-20  21-30  >31 | **(n = 281)**  111 (39,5%)  123 (43.7%)  34 (12.09%)  13 (4.63%) | |
| **Most hectic shifts**  Morning  Evening  Night | **(n =263)**  50 (19.01%)  12 (4.56%)  201 (76.42%) | |
| **Health variables**  **Present illness of participants (n=71)**  Hypothyroidism  Hypertension  Diabetes  Other  **Previous medical history of illness(n=35)**  COVID 19  Hypothyroidism  Tuberculosis  Other  **Previous surgical history of participants(n=52)**  LSCS  Laparoscopic cholecystectomy  Appendectomy  Other  **Family health history(n=207)**  Heart diseases  Endocrine disorders  Migraine  Neurological disorders  Others | **f(%)**  16 (5.34%)  10 (3.33%)  10 (3.33%)  35 (11.67%)  8 (2.67%)  5 (1.67%)  4 (1.33%)  18 (6%)  27 (9%)  8 (2.67%)  4 (1.33%)  13 (4.33%)  94 (45.41%)  68 (32.85%)  31 (14.97%)  6 (2.89%)  8 (3.86%) | |

**Table 1: Sociodemographic profile of nursing personnel (n=300)**

Table 1 depicts sociodemographic data of participants enrolled in the study. Out of 300 nursing personnel, 53(17.6%) are male and 247(83.45%) are females. The mean age of the participants is 33.53± 7.78yrs. Most of the nursing personnel i.e., 254(84.7%) are working at designation of nursing officers. Mean experience of nursing personnel in nursing profession, and present institute was 10.568±7.5yrs and 9.463±6.8 yrs. Out of 300, 281 nursing personnel were having night duties on regular basis, the rest were exempted on the grounds of their supervisory level and area of posting (OPD, radiodiagnosis, etc.) where they don’t have night duties. From those more than half of nursing personnel [189, (67.25%)] had at least 3-6 nights per month. Similarly, out of 281 nursing personnel approximately 44% of them have their night duties repeated after 11-20 days. Out of all of them night duty was reported to be hectic by nearly 76% of nursing personnel. Among 300 nursing personnel, 69 were already suffering from migraine. The other types of already diagnosed headache reported were tension type headache, vascular headache, headache due to HTN etc. Some nursing personnel i.e., 16 (5.34%) are suffering from hypothyroidism presently. HTN and diabetes was present with frequency of both to be 10(3.3%). COVID-19 was the past medical history of 8 subjects, other past illness reported were typhoid, lymphadenopathy, renal calculi, etc. LSCS has been reported by 27 nursing personnel as their previous surgical history as most of the participants were females. Almost 207 nursing personnel reported health issues of their family members. Heart disorders were reported by 94(45.4%) of the family members, followed by endocrine disorders in 68 and some other issues to be 8 in number that includes cancer, calculi etc.

**Six-month prevalence of headache in nursing personnel**

**(n=300)**

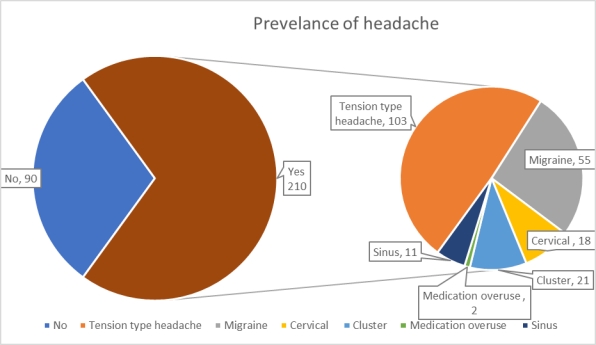


Fig 1shows prevalence of headache in nursing personnel. Out of 300, 70% (210) participants experienced headache in past six months. Almost half of the nursing personnel had tension type of headache, followed by migraine (26%), cluster (10%), 9% nursing personnel had cervical and 5% were having sinusitis pain while only 1% had headache due to medication overuse.

**Table 2: Table of triggering factors for headache perceived by nursing personnel**

**(n=210)**

|  |  |
| --- | --- |
| **Variables** | **f(%)** |
| **Sleep**  lack of sleep  too much sleep | 140 (66.66%)  128  12 |
| **Stress** | 100 (47.61%) |
| **Food**  specific food items  skipped meal | 91 (43.33%)  16  75 |
|
| **Workload** | 79 (37.61%) |
|
| **Environmental factors**  certain odors  bright light/sun  weather changes | 77 (36.66%)  17  31  31 |
| **Hormonal changes**  pre menstruation  during menstruation  post menstruation  menopause  hypoglycemia | 76 (36.19%)  24  40  6  3  3 |
| **Fatigue** | 75 ( 35.71%) |
| **Activities involving screen** | 32 (15.23%) |
| **Illness(fever/infection)** | 28(13.32%) |
|
| **Beverage**  lack of caffeine  too much caffeine  alcohol | 18 (8.57%)  16  7  5 |
| **Exercise** | 9 (4.28%) |
| **Others** | 28 (13.32%) |
| **Not known** | 63 (30%) |

Table 2 depicts the factors that are perceived by nursing personnel to be triggers for their headache. Almost 67% of the nursing personnel perceived disturbance in sleep to be the cause of their headache, followed by 100(47.61%) of nursing personnel reporting stress (work/personnel ) as a cause. In 91(43.33%) of subjects, mainly skipped meal is the cause. Out of 210 nursing personnel 79(38%) reported workload, as a cause of headache and for 77(36.6%) of them change in environmental factors was a trigger factor. Hormonal changes happening during menstruation had maximum frequency. Fatigue was reported by 75(35.7%) The illness/ infection like COVID-19, cold, anemia, etc. was perceived as a cause by 28(13.33%). A total of 28(13.32%) reported some other perceived causes for headache; that were post covid vaccination, long hours in PPE, past traumatic event, etc. Whereas 30% of the total 210 subjects with headache were not sure about any particular cause for headache.

**Table 3: Table to assess the association of various factors with headache among nursing personnel by using Chi-square test and Mann Whitney.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **f (%) n=300** | | **Chi square /P-value** | |
| **No headache**(f=90) | **Headache**(f=210) |
| **Gender**  Male  Female | 26 (49.1)  64 (25.9) | 27 (50.9)  183 (74.1) | 11.13 ,**0.001**\* | |
| **ICU vs non-ICU**  ICU  Non-ICU | 16 (26.7)  74 (30.8) | 44 (73.3)  166 (69.2) | 0.397,0.529 | |
| **Marital Status**  Married  Unmarried  Widow  Divorced | 58 (29.6)  31 (31.3)  0 (0.0)  1 (50) | 138 (70.4)  68 (68.7)  3 (100)  1 (50) | 1.764,0.623 | |
| **Hectic Shift**  Night  Other | 52(57.7)  38(42.2) | 149(70.9)  61 (29.1) | 4.946,0.032 | |
| **Health history variables of participants** | **No headache** | **Headache** | **Chi square /P-value** | |
| **Present**  Hypothyroidism  Hypertension  Diabetes  Other | 3 (17.6)  3 (22.2)  2 (20)  6 (17.1) | 13(82.4)  7 (77.8)  8 (80)  29(82.9) | 6.203,0.184 | |
| **Previous Medical History**  COVID 19  Hypothyroidism  Tuberculosis  Other | 2 (25.0)  2 (40)  1 (20)  5 (27.8) | 6 (75.0)  3(60)  3 (75)  13 (72.2) | 6.627,0.250 | |
| **Previous surgical history**  LSCS  Lap. Cholecystectomy  Appendectomy  Other | 5 (18.6)  1 (12.5)  1 (25)  5 (38.5) | 22 (81.4)  7 (87.5)  3 (75)  8(61.5) | 5.92,0.206 | |
| **Variables** | **Not headache** | **Headache** | **Mann Whitney (u)** | **p-value** |
| Age (in years) | 32±6.89 | 34±8.07 | 8233.500 | 0.07 |
| Total experience in nursing profession (in years) | 9±6.9 | 11±7.7 | 7954.500 | 0.030 |
| Total experience in PGIMER (in years) | 8±5.5 | 10±7.0 | 7677.500 | 0.010 |
| Total experience in particular ward (in years) | 5±4.1 | 4±3.9 | 8836.000 | 0.370 |
| Nights per month (in days) | 5.29±1.6 | 5.30±1.5 | 8529.500 | 0.865 |
| Perceived stress scale(total) | 16±6.5 | 19±5.2 | 6990.000 | <0.01 |
| Jenkins’s sleep evaluation scale(total) | 2±2.5 | 5±3.8 | 5568.000 | <0.01 |

Table 3 reveals as per Chi square test of association significant relationship was found between headache and gender variable and night perceived as hectic duty. Prevalence of headache in female and male nursing personnel was 74% and 51% respectively that clearly indicates higher prevalence of headache in female nursing personnel as compared to the male nursing personnel. Strong statistically association was also found in headache and night shift, nursing personnel who had headache also reported night as hectic shift. No significant relationship was found among headache and ICU vs non-ICU, marital status, as their p-value was 0.529 and 0.623 respectively.

It also depicts that higher proportion of nurses who had any present and past medical history or had undergone any surgery reported headache as compared to nurses who do not have any medical or surgical history.

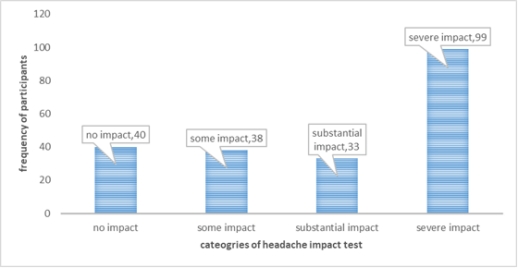
Duration of experience in PGIMER was significantly more, in nursing personnel who had headache was 10±7 years as compared to 8C:\Users\hp\AppData\Local\Temp\ksohtml1556\wps5.pngC:\Users\hp\AppData\Local\Temp\ksohtml1556\wps6.jpg5.5years in those who do not have headache. As the p-value is <0.01 it indicates that with the increasing years in PGIMER the prevalence of headache gets higher. The perceived stress scale has significantly higher score in nursing personnel who had headache as compared to those who do not have headache. Similarly in Jenkins sleep evaluation scale the score of nursing personnel with headache is higher. Concluding higher the stress and more sleep disturbances higher are the chances of headache.it can also be inferred that nursing personnel with more experience in PGIMER had headache. But out of both the subject groups i.e., with headache or without headache no group had clinically significant sleep alterations.

**Table 4-Findings related to characteristics of headache (n=210)**

|  |  |
| --- | --- |
| **Headache characteristics** | f(%) |
| **Nature of headache**  Acute  Chronic  Episodic | 86 (40.9)  18 (8.57)  106 (50.4) |
| **Type of headache**  Congestion like  Sudden severe  Dull constant rebounding  Dull like pressure  Non throbbing  Throbbing | 11(5.2)  33(11)  20(6.7)  71(23.7)  23(7.7)  76(25.3) |
| **Location of pain**  Left side of head  Right side of head  Forehead  From neck to head  Side of nostrils  Behind eyeballs  Back of the head  Whole head  Vary  Others | 27 (9.3)  35(12.1)  84(29)  20 (6.9)  15 (5.2)  45 (15.5)  22 (7.6)  25 (8.6)  12 (4.1)  5 (1.7) |
| **Severity of pain**  Mild  Moderate  Severe | 21(10)  99(47%)  90(43%) |
| **Number of days in one month**  1-3 days  4-7 days  8-11 days  12-15 days  16-19 days  >20 days | 42(20%)  C:\Users\hp\AppData\Local\Temp\ksohtml1556\wps12.png78(37.1%)  56(26.6%)  21(10%)  6(2.8%)  7(3.3%) |
| **Frequency of headache Episode/day**  1  2  3  >3 | 181(86)  21(10)  5(2.3)  3(1.4) |
| **Duration in hours**  <1hrs  1-2 hrs  2-3 hrs  3-4 hrs  4-5 hrs  5-6 hrs  >6 hrs | 72 (34.2%)  34 (16.1%)  43 (20.4%)  22 (10.4%)  17 (8.1%)  8 (3.8%)  14 (6.7%) |
| **Symptoms associated with headache** |  |
| Mood changes/irritability  Loud sound bothers you  Bright light / sun bothers you  Nausea/upset stomach  Difficulty concentrating  Eye tears / eye pain  Dizziness/light headedness/vertigo  Vomiting  Strong smell/odours bother you  Running and stuffy nose  Increased sensitivity of scalp hair and skin  Numbness and tingling sensation  Others | 107 (50.9%)  91 (43.33%)  77 (36.7%)  67 (31.9%)  67 (31.9%)  45 (21.42%)  34 (16.19%)  24 (11.42%)  18 (8.57%)  18 (8.57%)  15 (7.14%)  10 (4.76%)  2 (0.95%) |

Table 4 depicts the characteristics of headache; episodic headache was reported by 50% of nursing personnel. Out of 210, 25% experienced throbbing type of pain, location of headache was forehead in 29% with moderate severity of pain in 47%.Mean monthly frequency of headache was 6.82 days / month, nearly 90% had only one episode of headache per day and the duration of the headache was less than one hour in 34.2% of nursing personnel headache for less than 1 hour. Symptoms associated with headache. Mood changes and irritability was reported by half of the nursing personnel followed by loud sound, bright light/sun, nausea/upset stomach, difficulty in concentration and eyes tears/eye pain with frequency of 91(43.3%),77(36.7%), 67(31.9%),67(31.9%) and 45(21.5%) respectively. Some more symptoms reported by nursing personnel includes vomiting (11.4%), problem with strong smell and odor (8.57%), running/ stuffy nose (8.57%), increased sensitivity of scalp/hair/skin (7.14%) and numbness/ tingling sensation (4.76%). Only 2 subjects had other symptoms such as hot flushes and puffy eyes.

**(n=210)**



**Figure 2: Scoring of HIT-6 in nursing personnel**

Fig 2 depicts the scoring of headache impact test of the subjects. Approximately half of the subject got severely impacted by the headache, whereas least frequency was of substantial impact (15.71%). While no impact and some impact had frequency 19.03% and 18.09% respectively. All the nursing personnel with score more than 50 are impacted by headache so almost 81% of the subjects are impacted by headache and should therefore seek consultation.

**(n=210)**

|  |  |
| --- | --- |
| **AC:\Users\hp\AppData\Local\Temp\ksohtml1556\wps14.jpg** | **BC:\Users\hp\AppData\Local\Temp\ksohtml1556\wps15.jpg** |
| **CC:\Users\hp\AppData\Local\Temp\ksohtml1556\wps16.jpg** | **DC:\Users\hp\AppData\Local\Temp\ksohtml1556\wps17.jpg** |

**Figure 3: Treatment seeking behaviour for headache present among nursing personnel in past six month**

Fig3(A) depicts the tendency of subjects who visited any kind authorised health care facility for their headache problem. Out of 210 subjects who reported headache only 62(30%) of nursing personnel opted for medical attention for the headache where as 70% of them didn’t.

Fig 3(B) revels the type of medical facilities consulted by subjects for the treatment of their headache problem. Most of the nursing personnel preferred neurologist [ 47, (75.8%)], then internal medicine [12, (19.3%)]. The department of ophthalmologist and psychiatrist are preferred by 6(9.7%) and 4(6.4%) subjects respectively. The tendency of going to a pain clinic is the least ie.,1(1.6%).

Fig3(C)depicts the alternative or the complementary therapies being used by the nursing professionals for the treatment of headache. It indicates that almost quarter of the subjects preferred massage therapist, followed by homeopathy by 16% of the subjects. Other less used ones were physiotherapy by 12%, nutritionist by 4.8% and naturopathy by 3.2%. Herbalist and acupuncturist were least preferred with both having frequency of 1.6%of subjects.

Fig 3(D) depicts the investigations that nursing personnel have undergone for the diagnosis of headache. Almost 30% of them had EEG, followed by CT scan and sinus X-ray both by 12.9% of the subjects respectively. Out of all 62 subjects only 8% had MRI for headache diagnosis.

**Table 5: Non pharmacological and pharmacological treatment of headache used by nursing personnel. ( n=210)**

|  |  |
| --- | --- |
| **Non- pharmacological measures** | **f (%)** |
| Lying down/sleeping | 127 (60.47%) |
| Any over the counter medication | 89 (42.3%) |
| Massage your head | 81 (38.57%) |
| Vapour rubs | 81 (38.57%) |
| Being in dark/quiet room | 65 (30.9%) |
| Tying something around your head | 38 (18.1%) |
| Eye masks | 29 (13.8%) |
| Hot pack | 29 (13.8%) |
| Cold pack | 16 (7.6%) |
| Herbs/supplements | 14 (6.6%) |
| Naturopathy treatment | 14 (6.6%) |
| Others | 9 (4.3%) |
| Keeping physical active | 7 (3.3%) |
| Aroma therapy | 6 (2.8%) |
| Pacing back and forth | 1 (0.47%) |
| **Home remedies**  Tea  Coffee  Kadha  Lemon water  Other | 64(30.47%)  15(7.14%)  6(2.8%)  3(1.4%)  4(1.9%) |
| **Pharmacological treatment** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Medication (dose)** | **OTC (n=210)** | | **Prescribed (n=62)** | |
| **Acute headache** | **Chronic headache** | **Acute headache** | **Chronic headache** |
| Tab. PCM (500/600mg) | 113 (53.75) | 0 | 0 | 0 |
| Ibuprofen + pcm (400mg+ 325mg) | 11(5.2) | 0 | 0 | 0 |
| Diclofenac sodium (75mg/100mg) | 5(2.38) | 0 | 0 | 0 |
| Aspirin (325 mg) | 2(0.95) | 0 | 0 | 0 |
| Naproxen (550mg) | 0 | 0 | 26 (41.85) | 6(9.6) |
| Amitriptyline (10mg/25mg/50mg) | 0 | 0 | 3(4.8) | 2(3.2) |
| Propranolol (40mg) | 0 | 0 | 1(1.6) | 3(4.8) |
| Topiramate (25mg) | 0 | 0 | 0 | 1(1.6) |
| Pantacid | 0 | 0 | 0 | 1(1.6) |
| Others | 5(2.38) | 0 | 8(12.9) | 0 |

Table 5 Under non pharmacological management of headache self-management techniques used by nursing personnel were lying down/ sleeping by60%, followed by headache massage 38.5%, vapor rubs 38.5%, being in dark/quite room by 31% and tying something around headache by 18%. In combination to these measures tea and coffee was consumed by 30% and 7 % of nursing personnel respectively as a home remedy for headache. Under pharmacological management of headache 53.75 % of nursing personnel took tablet PCM as OTC medication and tab naproxen was prescribed to 41.85% and 9.6% of subjects for acute and chronic headache.

**DISSCUSSION**

The aim of our study was to access the prevalence, perception of causes of headache and treatment seeking behaviour of nursing personnel of tertiary healthcare centre. In our study the 6-month prevalence of headache was found to be 70%, with prevalence of TTH, migraine and cluster to be 49%, 26% and 10% respectively. On comparing it with global burden (46%) (9) and national burden (64%) (3) of headache it was higher in nursing personnel as compared to general population this is may be due to the nature of their job and increased burden on healthcare system due to the current pandemic. The prevalence of headache in tertiary private shealthcare facility in Vellore was 85%. (8), which is higher as compared to our study may be because of the more stress or lesser job satisfaction in the nursing personnel of private setting. In a China based study one year prevalence primary headache was 45.3% with migraine to be in 14.8% and TTH in 26.2%, indicating that the burden of headache is more in the nursing personnel of developing country may be due to weaker health care system.

Our study also revealed the female predominance of headache by a factor 6.7 times more (183:27). According to WHO headache is 5th most disabling problem in female at global level. (9) and in India as well such predominance can be observed as a result of community-based study in which the prevalence of headache in female and male was 58.3% and 41.7%. The higher suffering rate of headache in female is because of female hormones i.e., progesterone and estragon while regulating general biological functions through genomic and non-genomic pathways results in causing structural and functional changes in brain regions that are further involved in causing headache. (10) The headache was also more prominent in nursing personnel as compared to general female population this may be due to constant change in duty shifts leading to continuous juggling between work and family responsibilities.

In our study almost 30% of the nursing personnel weren’t able to perceive any particular cause for their headache. Out of remaining many reported perceived causes of headache to be sleep and workload followed by stress, fatigue, food, weather changes and menstruation. In current study some more factors like prolonged screen time and exercise were also reported by nursing personnel. Many reported factors in our study were similar to the study of Chabriat et al, which showed that sleep, stress, fatigue, food/drink, menstruation and weather changes were most frequent precipitating factor of headache. (2)

The direct association between workload and stress was also found as p value for both the variables was< 0.001. The study also showed that stress was found to be more in nurses who had headache as nursing staff with headache scored more on PSS as compared to those who do not have headache. The result of our study was congruent to the study conducted by Kao Chang et al. The study revealed that nursing staff suffering from headache experienced more stress at work as compared to those who didn’t have headache, showing direct association between headache and stress. (1) The study also concluded that stress have bidirectional relation with headache. This is because in relation to stressors the brain reacts in altered ways (systematic physiology and behaviour) that further increases the allostatic load or stress which cause headache. (19)

In present study significant association between disturbed sleep pattern or lack of sleep and headache was found as p value was <0.001. The nursing personnel with headache scored more on JSEQ than those who didn’t had headache indicating those with headache have poor sleep hygiene. But sleeping and lying down was also used as a comforting method during headache by 60% of nursing personnel. The present study revealed that disturbed sleep is major cause of headache as according to the article ‘Sleep and headache; the centre for arousal from sleep is associated with location of headache pain in brain.(18)So, it can be said that by only improving sleep quality the impact of headache can be reduced as according to the study of Gopichandran et al. that revealed by improving sleep hygiene the adversity of headache was reduced as in that study too positive co relation was between sleep quality and headache duration.(38) Sleep disturbance can cause headache or headache can be a cause of disturbed sleep as well. Hence, creating a vicious cycle.

In current study the nursing personnel who got headache due to lack of caffeine were 16 and acute headaches got relieved after the intake of caffeine in 79 nursing personnel. There is a co relation among headache and caffeine is due to the analgesic properties found in caffeine and hence used as prophylactic for primary headache but chronic use can lead to caffeine dependent headache as well. (27) So, judicial use of caffeine is advised and dependency of caffeine is to be avoided.

In our study monthly frequency of headache was found to be 4-7 times in 37% of nurses, with its duration to be <2 hrs 50.3%, location of pain to be forehead in 40%, approximately 40% and 32% experienced throbbing and tight band like pain. The characteristics of headache in our study are not much different than study conducted in CMC Vellore. In which characteristics of headache including monthly frequency of headache was 1-4 times in 85% of nurses, with its duration to be <2hrs in 67%, nearly half of them had headache in temporal region, throbbing pain and tight band like pain was experienced by 38% and 20% respectively in nurses. (8)

It was revealed through current study that half of subjects were having mood changes/irritability followed by loud sound, bright light, difficulty concentrating and nausea as associated symptoms with headache. Similarly, the study conducted in CMC Vellore showed that nausea, neck pain, fatigue, mood changes and decreased appetite were associated symptoms experienced by the subjects during the headache episodes. (8)

Results of this study showed that 60% of nursing personnel preferred sleeping/ lying down, then consumption of over-the-counter medication, followed by head massage, applying vapor rubs, tying something around head and use of hot pack/cold pack and eye mask to achieve comfort during headache. Similar results were observed in the study conducted by Kao Chang showed that the most preferred was sleeping, taking rest, then taking medication, visiting doctor and psychological help for their headache problem. (1)

The percentage of nursing personnel who didn’t seek any consultation from authorized health facility in present study was 70%. Similar result was found in the study of Margaret M. conducted a study revealed that the percentage traditional physician dependent was 23.2%. (28) Indicating towards the higher self-treating tendencies of nursing personal and may be headache isn’t considered a much of health issue by nursing personnel. Out of 30% of the nursing personnel who did seek any consultation,75.8 % went to neurologist and 19.3% went to department of internal medicine, which is incongruent to study of Oshinaike et al where the percentage of consulting general practitioner and neurologist was 83.9 and 16.1(29) This is may be due different health care system in both the study.

This present study shows the 29% subjects underwent EEG testing where the least performed diagnostic was MRI. The least recommendation of MRI for the diagnosis of headache is may be due to exposure to more radiation, long waiting period for both appointment and result. Comparatively higher tendency of EEG can be explained on the basis of the easy accessibility and no exposure to harmful ionization. It is also non-invasive and easily repeatable diagnostic test. (39)

In our study almost few to none nursing personnel used deep breathing and muscle relaxation exercises as a means to get relieve from headache pain. But these techniques are proven to be very helpful in reducing the severity of tension type headache and hence it will be beneficial if nursing personnel are made aware of these techniques as evidence-based facts were found in RCT by Gopichandran et al. showed that deep breathing and progressive muscle relaxation techniques can improve both the sleep quality and headache severity in chronic tension type headache. (40)

The complementary and alternative therapies were used by 64.5% of nursing personnel in our study. It may be said that the use of cam is almost same in nursing personnel and general population after comparing it with study of Kristoffersen et al revealed that use of cam was found to be 62% and 73% in subjects with primary and secondary headache. (30)

In present study half of the subjects were using PCM as OTC drug followed by combiflame, Diclofenac and crocin. The prescribed drugs for acute and chronic headache were Tab. Naxdom or Tab. Naproxen. or Tab Naproxen with tab Ciplar. The trend of pharmacological management for headache was almost same to the article by Ahmed et al mentioned that Paracetamol and ibuprofen are an effective OTC analgesic drug for TTH and tricyclic antidepressant like Amitryptine is a prescribed drug. Similarly for migraine OTC drugs used is PCM or ibuprofen (600-800mg) or aspirin (900mg) and Tab. Naproxen 500mg is widely prescribed drug chronic headache. (41)

**Recommendation:** On the basis of findings recommendations that can be offered for future researches are replication of same study on a larger group/sample to validate the findings. A similar study may be conducted to compare the data among private and government hospitals. A qualitative research can be conducted on same problem. A study can be conducted to assess the effect of headache on the quality of care provided to the patient by nursing personnel.

**CONCLUSION**

The study showed that 70% of the total nursing personnel were having headache with the frequency of it to be 4-7 times in a month. The burden of headache was maximum among female nursing officers. The perception of headache is not known by most of the people but those who know consider stress and sleep disturbances as their major cause of headache. The study also showed direct association between headache and total experience in nursing profession. Common type of headache was tension type headache. The study also showed very poor professional treatment seeking behaviour for headache. The study also shows very prominent self-treating behaviour among nursing personnel for the headache with the use of Tab. Paracetamol as most preferred over the counter medication. And tea and coffee are considered to be the most common non pharmacological treatment for acute headache.

**REFERENCES**

1. Lin KC, Huang CC. Association between stress at work and primary headache among nursing staff in Taiwan. Headache. 2007 Apr;47 (4):576-84. doi: 10.111/j. 1526-4610.2007.00759 .x. PMID: 17445107
2. Chabriat H, Danchot J, Micheal P, Joire JE, Henry P. Precipitating factors of headache. A prospective study in a national control-matched survey in migraineurs and non-migraineurs, Headache. 1999 May;39(5):335-8. doi: 10.1046/j. 1526-4610.1999,3905335 .x. PMID: 11279913
3. Rao GN, Kulkarni GB, Gururaj G, Stovner LJ, Steiner TJ. The burden attributable tp headache disorders in India: estimates from a community- based study in Karnataka State. J Headache Pain. 2015;16:94. doi: 10.1186/s10194-015-0574-9. Epub 2015 Nov 9. PMID: 26553066; PMCID: PMC4639543.
4. [http://www.ninds.nih.gov/Disorder/all- disorders/headache.informationpage](http://www.ninds.nih.gov/Disorder/all-%20disorders/headache.informationpage).
5. Nadaoka T, Kanda H, Oiji A, Morioka Y, Kashiwakura M, Totsuka S. Headache and Stress in a group of Nurses and Government Administrators in Japan. Headache: The Journal of Head and Face Pain. 1997;37(6):386-391. doi:10.1046/j.1526-4610.1997.3706386.x
6. Xei W, Li R, He M, Cui F, Sun T, Xiong J, et al. Prevelance and risk factors associated with headache amongst medical staff in South China. J Headache Pain.2020;21(1):5.doi: 10.1186/s10194-020-1075-z.
7. Wang Y, Xie J, Yang F, Wu S, Wang H, Zhang X et al. The prevelance of primary headache disorders and their associated factors among nursing staff in North China. The Journal of Headache and Pain.2015;16(1).doi:10.1186/1129-2377-16-4.
8. Priya SM, Jesudoss M, Snegalatha D, Bai RS, Mathew V. Headache among nursing staff. Indian J ContNsgEdn 2018;19:91-5.doi:10.232.74.23
9. LjStovner, K Hagen, R Jensen, Z Katsarava, Rb Lipton et al. 2020The global burden of headache: a documentation of headache prevelance and disability worldwide 2020;27(3):193-210.doi:10.1111/j. 1468-2982. 2007.01288.x.
10. Allias, G., Chiarle, G., Sinigaglia, S. et al. Gender- related differences in migraine. Neurol Sci 41,439-436 (2020).
11. Maleki, N., Becerra, L., Borsook, D. (2020). Migraine: maladaptive brain response to stress. Headache, 102-106.
12. Gopichandran L, Kanniammal C, Jaideep M, Dhandhapani M et al. Sleep quality in patients of chronic tension type headache: report from a tertiary care facility
13. Teiso, C., Vacca, A., Felbush, A. et al. Migraine and sleep disorders: a systematic review. J Headache Pain 21, 126(2020).http://doi.org/10.1186/s10194-020-01192-5
14. Hatfield, Margaret M., “ Self-Diagnosis and self treatment behaviour in registered nurses “(1996). Masters thesis.288
15. Olajumoke Oshinaike, Oluwadamilola Ojo, Nijideka Okubadejo, Olaitan Ojelabi, Akinola Dada, “ Primary headache disorders at a Tertiary Heath Facility in Lagos, Nigeria: Prevelance and Consultation Patterns”, Biomed Research International vol.2014, Article ID 782915,5 pages,2014 shttp://doi.org/10.1155/2014/782915
16. Miskov, Crotica “Neurophysical methods in headache diagnosis”(2018).article in croatian;62(2)188-96.PMID:18710083
17. Alstadhaug KB, Andreou AP, Caffeine and primary (Migraine) Headache -Friend or Foe? Front Neurol.2019 Dec 3;10:1275.doi:10.3389/fneur. 2019.01275. PMID:3184929; PMCID:PMC6901704
18. Gopichandran L, Srivastava AK, Vanamail P, Dhandapani M et al. Effectiveness of Progressive Muscle Relaxation and Deep Breathing Exercise on Pain, Disability, and Sleep among patients with chronic Tension- Type Headache: A randomized Control Trial 2021.doi:10.1097/HNP00000000000000460.
19. Kristoffersen ES, Aaseth K, Grande RB, Lundqvist C, Russell MB. Self- reported efficacy of complementary and alternative medicine: the Akershus study of chronic headache. J Headache Pain. 2013 Apr 18;14(1):36.doi:10.1186/1129-2377-14-36.PMID:23596996;PMCID: PMC3637304
20. Fayyaz Ahmed Headache disoders: differentiating and managing the common subtypes 2012. British Journal of Pain 6(3):124-132.doi:10.1177/2049463712459691