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## Tension Type Headache and Percieved Stress Level: A Correlational Study

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### ABSTRACT

**Background:** Tension-type headaches (TTH), together with migraines, are the most common primary headaches, affecting 80% of the general population. Stress is known to be a contributing factor to chronic tension-type headache (CTH), with research indicating that mental stress is the most commonly reported trigger and aggravating factor of a CTH episode. The study was conducted to find out the correlation between TTH and Perceived stress level among male and female students of Rewari district in Haryana. **Methods:** Perceived Stress Scale (PSS) rating and an IHS TTH Diagnostic questionnaire were used in this study. A sample of 150 students including 75 males and 75 females in the age group of 18-25 years complaining of frequent headache were taken from different colleges and universities located in Rewari district of Haryana. In the second phase, only the diagnosed cases of tension type headache participated in the study and fill the perceived stress questionnaire. After data collection, analysis of data using SPSS software was done which then further help in testing the hypothesis and extracting the result and inferences. Descriptive analysis of quantitative data expressed as mean and standard deviation. Mean and Chi square test were used for comparison of individual on

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quantitative parameters between groups. P value < 0.05 was considered statistically significant. **Results:** The mean age of subjects with TTH was  $22.79 \pm 2.14$ . Value of PSS \* TTH \* Gender Pearson chi square is 21.77 at a significance value of .000 and is considered as significant differences exists in the relationship of PSS \* TTH \* Gender. Significant correlation exists in TTH and perceived stress among males and females of 18-25 years. **Conclusion:** Significant correlation exists between tension type headache and perceived stress. Subjects with very high stress score are more likely to report chronic tension type headache.

**Keywords:** *Tension, Headache, Percieved Stress*

**Tension type headache (TTH)** is the most common form of headache what many people consider a normal headache in contrast to migraine. The recent second version of the International headache society classification distinguishes between three forms of TTH primarily on basis of headache frequency: 1) in frequent episodic TTH (fewer than 12 headache days/year). 2) frequent episodic TTH (between 12 and 180 days/year). 3) chronic TTH (at least 180 days/year) (Ashina, S.; Bendtsen, L; Jensen, R., 2006). TTH is characterized by a bilateral, pressing, tightening pain of mild to moderate intensity, occurring in short episodes of variable duration (episodic forms) or continuously (chronic forms). The headache is not associated with typical migraine features such as vomiting, severe photophobia and phonophobia. In the chronic form only one of these accompanying symptoms is allowed and only mild nausea is accepted (Jensen, R., 1999). Stress is the non-specific response of the body to any demand for change (Seyle, H., 1936). Stress is known to be a contributing factor to chronic tension-type headache (CTH), with research indicating that mental stress is the most commonly reported trigger and aggravating factor of a CTH episode (Cathcart S.et al. 2010; Olesen J. 1991). One hypothesis for the mechanism by which stress contributes to CTH is that it aggravates already increased pain

sensitivity in CTH sufferers. Correlations among pain sensitivity, stress and headache activity, and evidence that both stress and pain sensitivity predict headache activity, support this central model (Cathcart, S. et al. 2008; Bottos, S. et al. 2004). Furthermore, experimentally inducing mental stress has been demonstrated to increase pain sensitivity and headache intensity in CTH sufferers .

Published estimates of prevalence of TTH vary over a wide range from 1.3% to 65% in men and 2.7% to 86% in women. Nine studies have used the widely accepted 1988 IHS criteria to assess the epidemiology of TTH, but even among these studies prevalence estimates vary widely. Prevalence increased with increasing education level in both sexes, reaching a peak in subjects with graduate education of 48.5% for men and 48.9% for women (Brian, S.S.; Walter, F. S.; David, S.; Richard, B.L., 1998).

Young subjects are more frequently affected than older subjects (Jensen, R., 1999). The female- to -male ratio of TTH is 5:4 indicating that, unlike migraine, women are affected only slightly more than men (Stovner, L; Hagen, K. et. al.,2007). Tension-type headache is more prevalent in females than in males (male:female ratio about 1:1.5), and in both sexes prevalence declines with age (Philips 1977; Abramson et al. 1980; Rasmussen et al. 1991; Pryse-Phillips et al. 1992). Any comparison of prevalence between populations must take into account age and sex differences. On average, perceived stress is higher in individuals who report chronic daily headache than in a healthy population. Although recurrent TTH sufferers have similar physiological responses to laboratory stressors, they report a greater number of everyday stresses or daily “hassles” than do matched non-headache control subjects. Furthermore, stressful events are appraised as more stressful for recurrent TTH sufferers than for headache-free subjects. Stress is also the most frequent headache trigger with 88% of patients from the general population in urban and rural areas reporting this variable as a cause for ensuing headache. The prevalence peaks between ages 30 to 39 and decreases slightly with age. Risk factors for developing TTH were poor self- rated health, inability to relax after

work, and sleeping less hours per night (Lyngberg, A.C; Rasmussen, B.K. et. al., 2005).

Headaches generally are reported to occur in relation to emotional conflict and psychosocial stress, but the cause-and-effect relationship is not clear. The triggers reported most frequently for TTH are stress (mental or physical), irregular or inappropriate meals, high intake of coffee and other caffeine containing drinks, dehydration, sleep disorders, too much or too little sleep, reduced or inappropriate physical exercise and psychologic problems, (Rasmussen, B.K.; Jensen, R. Schroll, M. et.al., 1992). The combination of non-pharmacologic and pharmacologic treatments are prescribed separately but should go hand in hand. Psychological treatment strategies have reasonable scientific support for effectiveness. Relaxation training is a self-regulation strategy that provides patients with the ability to consciously reduce muscle tension and autonomic arousal that can precipitate and result from headaches. It is most likely that cognitive changes (i.e self-efficacy) rather than reductions in muscle tension account for the improvement in TTH with EMG (electromyography) biofeedback.

Cognitive-behavioural therapy (stress management) aims to teach patients to identify thoughts and beliefs that generate stress and aggravate headaches. The exact degree of effect of psychological treatment strategies is difficult to estimate but Cognitive behavioural therapy is as effective as tricyclics antidepressants, whereas a combination of the two treatments seemed more effective than either treatment alone. Research indicates that CBT and stress management is most effective when combined with relaxation training or biofeedback (Holroyd, K.A.; Donnell, F.J., et.al., 2001). Finally, stress has been noted to exacerbate headache symptoms; and minor everyday stressors, rather than major life events, have been tagged as a contributor to maintaining or prolonging existing headache. Thus, stress, particularly as a result of minor everyday frustrations, is an important area of investigation in relation to headache.

Most of the evidences on Tension type headache and comorbid stress disorder comes from western studies. There is very little

research looking into the prevalence of this psychological disorder in patients with TTH in a developing country like India. Due to significant socio-cultural differences, it is difficult to generalize research findings from developed countries. This therefore warrants a need to undertake basic research in a developing country like India. This study is conducted with the aim to study the prevalence of tension type headache in male /female students suffering from frequent headaches. And to find out the relationship between tension type headache and perceived stress level among male/female students.

## **MATERIALS AND METHODS**

### ***Sample and Data Collection***

A sample size of 150 students including 75 males and 75 females in the age group of 18-25 years complaining of frequent headache was taken from different colleges and universities located in Rewari district of Haryana. The primary method of data collection was self-report questionnaires. The PSS rating and IHS TTH Diagnostic questionnaire were used in this study. The Perceived Stress Scale (PSS10) was used to measure the degree to which situations in one's life are appraised as stressful (Cohen & Williamson, 1988).

### ***Inclusion criteria***

Consented subjects of 18-25 years should report frequent headaches, should not currently receiving (or having received in the past 12 months) intervention for headache. No psychiatric or major medical condition currently or in the past 12 months, no concurrent headache or pain symptoms or diagnoses other than CTH. CTH subjects were required to not be taking or not have taken in the past three months any analgesic medication other than  $\leq 1000$  mg per day of acetylsalicylic acid or paracetamol. None of the subjects reported taking prophylactic medication for headache or daily analgesic use.

### ***Tools and Techniques***

**IHS (International Headache Society) Headache Diagnostic Questionnaire** (Fishbain, D.A. et.al., 2001) to diagnose the tension

type headache. It has satisfactory reliability and validity. The International Headache Society classification of primary headaches in the International Classification of Headache Disorders (ICHD) is almost universally accepted by researchers and clinicians. It is highly unlikely that reputable journals will accept submissions for publication if the cohorts have not been selected strictly according to the ICHD. Likewise, in the clinical setting the appropriate treatment is prescribed according to how the patient's headache is classified.

**Perceived Stress Scale-** Perceived Stress Scale (PSS) was developed by Cohen (1985). It is designed to measure the degree to which respondents found their lives "unpredictable, uncontrollable, and overloading" (Cohen & Williamson, 1988, p. 34). The scale also includes a number of direct queries about current levels of experienced stress. As a result of factor analysis, a shorter version of the PSS scale was developed (Cohen and Williamson 1988) by the authors of the original PSS. The PSS10 was derived by dropping four items from the original scale. Cronbach's alpha coefficient for the PSS10 was .78. Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 would be considered low-stress. Scores ranging from 14-26 would be considered moderate stress. Scores ranging from 27-40 would be considered high perceived stress levels. The Perceived Stress Scale has been shown to have a high degree of reliability and validity.

### *Procedure*

Subjects complaining frequent headaches and fulfilled the inclusion criteria of the study were asked to fill IHS Headache Diagnostic questionnaire and then assessed to diagnose the possible cases of tension type headache. In the second phase, only the diagnosed cases of tension type headache participated in the study. Those subjects then fill the perceived stress scale questionnaire. After collecting the sufficient data, the next step was the analysis of data which then further help in testing the hypothesis and extracting the result and inferences.

**Statistical Analysis**

The analysis of collected data included differentiating the subjects on the basis of TTH criteria into two groups based on their gender. Descriptive analysis of quantitative data expressed as mean and standard deviation. Qualitative data were expressed as percentage and absolute numbers. Mean and Chi square test were used for comparison of individual on quantitative parameters between groups. Chi- square test was used to find correlation with SPSS software. P value < 0.05 was considered statistically significant.

**RESULTS**

*Chi-Square Tests (TABLE 1.1)*

Gender		Value	df	Asymp. Sig (2-sided)
Male	Pearson Chi-Square	10.23	2	.006
	Likelihood Ratio	11.876	2	.003
	Linear-by-Linear Association	9.694	1	.002
	N of Valid Cases	42		
Female	Pearson Chi-Square	14.673	2	.001
	Likelihood Ratio	17.334	2	.000
	Linear-by-Linear Association	13.748	1	.000
	N of Valid Cases	60		
Total	Pearson Chi-Square	21.77	2	.000
	Likelihood Ratio	24.298	2	.000
	Linear-by-Linear Association	20.272	1	.000
	N of Valid Cases	102		

Total 150 students including 75 males and 75 females reporting frequent headaches participated in the study. All the subjects were students with different backgrounds and studying either at graduation, post-graduation, M phil. or Doctorate level. The subjects were enrolled

## Tension Type Headache and Percieved Stress Level: A Correlational Study

by strictly following the inclusion criteria. The mean age of subjects with TTH was  $22.79 \pm 2.14$ . Out of 150 headache patients, only 102 patients were diagnosed with tension type headache, in which 42 were males and 60 were females and these 102 subjects then rated on PSS. Male/female distribution was 50:50 in subjects reported frequent headache group. Male/female distribution was then left with 28: 40 in TTH group and subjects rated on PSS. The prevalence of TTH among frequent headache sufferers was found to be 68%. Out of 102 diagnosed cases of TTH, 68 fulfill the criteria of episodic TTH and 34 are diagnosed with chronic TTH. It means 66.7% subjects are having episodic TTH and 33.3% have chronic TTH. On statistical analysis it was found that there is significant difference among males and females on TTH criteria. That is females show high prevalence of TTH as compared to males.

Above table 1.1 shows the chi square values related to table no. 5.6 of PSS \* TTH \* Gender Cross-tabulation keeping p value  $< 0.05$  as significant. Value of PSS \* TTH \* Males Pearson chi square is 10.23 at a significance value of .006 and is considered as significant differences exists in the relationship of PSS \* TTH \* Males. Value of PSS \* TTH \* Females Pearson chi square is 14.67 at a significance value of .001 and is considered as significant differences exists in the relationship of PSS \* TTH \* Females. Value of PSS \* TTH \* Gender Pearson chi square is 21.77 at a significance value of .000 and is considered as significant differences exists in the relationship of PSS \* TTH \* Gender.

## DISCUSSION

Chronic headache is as much as a problem in India as elsewhere in the world with a rising trend in young adults which negatively affects the quality of life of the affected person. In current scenario of increasing prevalence of headache in students, most of them have been found to practice self-medication leading to inappropriate management and sometimes analgesic overuse causing treatment refractoriness. Headache patients frequently report stress to be one of their main activators or aggravators for headache .The



association between stress and TTH has been stressed by many authors. It is supposed that stress can be a predisposing factor contributing to the onset of headache disorders, that it accelerates the progression to chronic headache, provokes and exacerbates headache episodes and that the headache experience itself can serve as a stressor. Tension-type headache (TTH) and migraine are the most common primary headache disorders, affecting up to 80% of the general population (**Rasmussen, B.K. et al. 1993**). It is revealed from the study that significant relationship exists between tension type headache and perceived stress among males and females of 18-25 age- group. It means that the way we perceive stress can be a factor that causes TTH or aggravate the condition. It is also shown that males and females with very high stress score are experiencing chronic TTH and subjects with high stress scores may have chronic or episodic TTH. And subjects with average stress scores are suffered from episodic TTH only. It shows that there would be significant relationship among the male/female subjects on both tension type headache criteria and stress level.

It is also revealed that subjects who are diagnosed with TTH of either type also have higher stress scores. Behavioral treatments (i.e. cognitive behavioral therapy, biofeedback (Andrasik, F. 2010), relaxation training) have demonstrated clinical efficacy when practiced correctly. Yoga are mentioned to improve headache as well (Campbell, J. K. et al. 2008). Behavioral treatments may be used individually or in conjunction with pharmacologic and other interventions and may augment the effectiveness of other treatments, or minimize the need for their use. Our results underline the need for stress management strategies in people with chronic headache or having a high or with very high scores.

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## Tension Type Headache and Percieved Stress Level: A Correlational Study

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## Tension Type Headache and Percieved Stress Level: A Correlational Study

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