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## PREVALENCE OF DIFFERENT TYPES OF HEADACHE IN URBAN AND RURAL AREAS OF THE PUNJAB PROVINCE OF PAKISTAN

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**Abstract:** Headache is worldwide frequently occurring neurological disorder in approximately all age levels. According to International Classification of Headache Disorders, it has been classified into primary and secondary headache. The purpose of study was to find relative occurrence of different forms of headache like Migraine, Tension headache, Cluster headache, Psychotic headache, Medication over use headache, Spinal headache and Cervicogenic headaches in Rural and Urban population of the Punjab province of Pakistan. In this survey based study, the questionnaires were distributed randomly among the people, aged 20 to 30 years of either gender in selected areas of the Punjab province. The questionnaires were self explanatory and contained all the information about types of headaches. The data obtained after survey was analyzed by SPSS. The results indicated that Tension headache was found to have the highest prevalence (65.5%) while the occurrence of Migraine, Cluster headache, Psychotic headache, Medication over use headache, Spinal headache and Cervicogenic headaches was 8.5%, 17%, 3.5%, 1.5%, 2.7% and 1.4%, respectively. However, the ratio of Migraine, Psychotic headache and Tension headache was more in female as compared to male population. Similarly, the people living in rural areas generally experienced Cluster headache (20.9%), Spinal headache (3.4%) and Cervicogenic headache (1.7%). We concluded that highest prevalence of Tension headache is due to stress, overburden and worries of everyday life which people usually experience at different stages of their lives.

**Keywords:** Headache, Tension Headache, Cluster Headache, Migraine.



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## INTRODUCTION

Headache is the most devastating neurological disorder if it is occurring recurrently or becoming a chronic form. The people suffering from headache often experience severely disabling conditions like nausea, vomiting and hyper-sensitivity reactions which exert negative impact on the individual's everyday life<sup>1</sup>.

International Classification of Headache Disorders 2<sup>nd</sup> Edition (ICHD-2) classify the headache into primary (non pathological) and secondary (pathological) headache. Migraine, tension headache, cluster headache and trigeminal-cephalgias are included into primary headache while sinus headache, headache due to illness, medication over use headache, aneurysm headache, spinal headache, cervicogenic headache, psychotic headache, headache due to homeostasis disturbances and headache due to drug abuse and withdrawal are studied under the heading of secondary headache<sup>2</sup>.

People suffering from headache often undergo deteriorated functionality in their routine work usually at home, work places and school<sup>3</sup>. Headache exerts significant pessimistic effects over the economy and social set up of a nation<sup>4</sup>. The most prevailing and customary forms of headache which occur in children, adolescents as well as in adults are tension headache and migraine<sup>5</sup>. The total lifetime frequency of primary headache is 90% across the World in which Tension-type headache hits 80% of female and about 67% of male population, settled in developed countries<sup>6</sup>. There is an extra burden of headache and other neurological disorders in low and middle income (LAMI) countries, where 85% of the global populations are inhabitants<sup>7</sup>.

Migraine refers to recurrence of modest to severe excruciating or pulsing pain usually experienced on one side of the head. This is categorized into five main classes out of which migraine with aura and migraine without aura are the most famous types. Migraine with aura is characterized by focal neurological characteristics leading to migrainous headache but might come with or without occurrence of headache and symptoms of aura typically develop over five minutes and lasting up to sixty minutes<sup>8</sup>. Migraine without aura is characterized by mild to severe, pressing and pulsating headache either unilateral or bilateral which is aggravated by physical activities and may be associated both with photophobia and phonophobias<sup>9</sup>. In North American population, 7% of men and 18% of women are suffering from migraine with minimum of one attack per annum<sup>10</sup>.

Cluster headaches or "alarm clock headaches" are spontaneous and throbbing attacks of severe pain occurring periodically and unilaterally often behind one eye and scorching downward to the base of the brain. In contrast to pulsate nature of migraine headache, it exerts knife like sharp and drilling sensations which peaks in ten to fifteen minutes and remains unbearably intense in next one to two hours. Cluster headaches may commence unpredictably and are the

worst forms among all the headaches. The sufferer exhibits marked agitation, restlessness and exhausted and usually gets many attacks per day for even up to several months. This may be episodic or chronic. In episodic Cluster headache, cluster periods last from few days to one year along with attack free periods of one or more months in between. However, in chronic type, cluster attacks recur for more than one year without diminution<sup>11</sup>.

Tension headache is a diffusing, mild to moderate pain radiating from backside of the neck, eyes and brain exerting pressure around the head like a tight band. This is the most common type of headache usually lasting from few minutes to hours or even days<sup>12</sup>. Psychotic headache refers to false beliefs of patients that a serious worsening condition is happened or going to be happened. This produces a series of delusions and misperceptions in the mind of sufferer which provokes acute or recurring attacks of headache<sup>13</sup>.

Spinal headache results from surgical procedures, spinal tapping, and compression of vertebral column which produces intense pain reflexes in back as well as in head region<sup>14</sup>. Cervicogenic headache is a hemi-cranial perplexing pain arising from soft and bony structures of the neck which may results into stiffening and painful spasm into neck and head region<sup>15</sup>.

Medication over use headache (rebound headache) is a secondary cause of chronic daily headache (CDH) due to the overuse of acute headache medication<sup>16</sup>. Excessive use of headache medication is a secondary source of chronic headache which is referred to medication over use (rebound) headache. Rebound headache attacks are awaked by extensive use of analgesics<sup>17</sup>.

## METHODOLOGY

Four thousand people of either gender aged 20 to 30 years were randomly selected from four districts (Lahore, Sahiwal, Bahawalpur and Sargodha) in the Punjab province of Pakistan, including both rural and urban residents. Prior to the survey, the people were informed and briefed about the purpose and outcomes of the study. The questionnaires were circulated among the people and they were asked first to read and understand the questionnaire fully and then to add up of necessity information related to their headache. The people, who were uneducated, especially those living in rural areas, were briefed about questionnaire in their local language and necessarily information was collected orally and noted down in questionnaire by our team members. At the end of the survey, the participants were appreciated and thanked specially for being the part of our study.

### Questionnaire development

The questionnaire was designed in such a way that it covered all the aspects of the study and was pretested rigorously. At initial stage the first draft of questionnaire was reviewed by the expert researchers of the department and a few questions and contents were modified

according to study design. Finally it contained both open ended and close ended questions along with complete descriptions of different forms of headache. The study was approved by the research Ethics Committee of the institution.

### Statistical procedures and data analysis

All the questionnaires were observed and analyzed after categorization of data sets into urban and rural population separately. Moreover, population was also divided on the basis of gender to find prevalence of headache in male and female population. The sample size was four thousand ( $n= 4000$ ) from all the four districts of the Punjab, half from the rural and rest from the urban citizens. For statistical analysis the data was correctly entered in SPSS and analyzed in term of percentage population suffering from different headache types. Statistics t- test was applied to find p values (level of significance between different groups). The level of significance was set at  $P \leq 0.05$ .

### RESULTS

Of the total, 65.5% of the general population of the Punjab province (59.0% males and 72.0% females) suffers from Tension headache. The prevalence of Cluster headache was found to be 23.7% in males and 10.4% in females with total of 17%, 2<sup>nd</sup> commonly occurring type after the Tension headache. However, the ratios of occurrence of Migraine, Psychotic headache, medication over use headache spinal headache and Cervicogenic headache were 8.5%, 3.5%, 1.5%, 2.7% and 1.4%, respectively. The relative prevalence of different types of headache with respect to gender along with level of significance is shown in Table 1. Comparison of the Rural and Urban population indicated that there is a significant difference ( $P \leq 0.001$ ) of Tension headache and Cluster headache in both groups. The relative prevalence of different types of headache in the Rural and Urban population along with p values is shown in Table 2.

**Table 1: Association of prevalence of different types of headache with Gender of subjects**

Types of Headache	Gender		Total	P value
	Male N (%)	Female N (%)		
Migraine	117 (5.8%)	222 (11.1%)	339 (8.5%)	<0.001
Tension headache	1180 (59.0%)	1440 (72.0%)	2620 (65.5%)	<0.001
Cluster headache	474 (23.7%)	207 (10.4%)	681 (17.0%)	<0.001
Psychotic headache	68 (3.4%)	73 (3.7%)	141 (3.5%)	0.553
Medication over use headache	44 (2.2%)	15 (0.8%)	59 (1.5%)	<0.001
Spinal headache	91 (4.5%)	15 (0.8%)	106 (2.7%)	<0.001
Cervicogenic headache	27 (1.4%)	27 (1.4%)	54 (1.4%)	0.997

The level of significance was set at  $P \leq 0.05$ .

**Table 2: Association of prevalence of different types of headache with living status of subjects**

Types of Headache	Living Status		Total	P value
	Rural N (%)	Urban N (%)		
Migraine	170 (8.5%)	169 (8.5%)	339 (8.5%)	0.995
Tension headache	1229 (61.5%)	1391 (69.6%)	2620 (65.5%)	<0.001
Cluster headache	417(20.9%)	264(13.2%)	681(17%)	<0.001
Psychotic headache	65(3.3%)	76(3.8%)	141(3.5%)	0.390
Medication over use headache	18(0.9%)	41(2.1%)	59(1.5%)	0.003
Spinal headache	67(3.4%)	39(2.0%)	106(2.7%)	0.14
Cervicogenic headache	34(1.7%)	20(1.0%)	54(1.4%)	0.055

The level of significance was set at  $P \leq 0.05$ .

## DISCUSSIONS

Our study indicated that 69.6% of Urban and 61.5% of the rural people were suffering from Tension headache, out of which 59% were male and 72% were female population. Tension headache is highly prevalent not only in our study but all over the World also.

A population based study indicated that prevalence of Tension headache was 78% in Denmark with majority of population (37%) suffering from infrequent episodic attacks while 2-3% people had Chronic Tension type headache<sup>18</sup>. Episodic tension type headache (ETTH) was more prevalent (38%) while chronic tension-type headache (CTTH) having incidence of just 2-3%, all over the World<sup>19</sup>. Throughout the World, The high incidence of Tension headache might be due to stress, over burden and lifestyle complications, which people often experience in their everyday life. Cluster headache was found to be 2<sup>nd</sup> most prevalent type of headache (17%) in which 10.4% of female and 23.7% of male population was suffering while its trend in Urban (13.2%) and rural (20.9%) community was significantly different ( $P \leq 0.001$ ). The prevalence of CH is high all over the World. D'Alessandro *et al* found the incidence of CH to be 147/100 000, based upon a hypothetical survival instances of  $\geq 15$  years<sup>20</sup>. The reason for higher incidence of Cluster headache in rural areas might be due to lack of proper headache management and control. All over the World, the incidence, frequency of attacks per bout and scale of intensity of CH is less in female gender as compare to males<sup>21</sup>.

In this study, the prevalence of Migraine headache was noted to be 11.1% in females and 5.8% in males with sum total of 8.5% among all the headache types. However, the proportion of migraine headache was same 8.5% in both urban as well as in the rural areas. Some features of Migraine i.e. nausea vomiting and photophobia may also exists in CH but major difference between both headache types is the aura symptoms which are lacking in CH<sup>22</sup>. During study, it was observed that different stimuli like pollution, noise, intense light, congested environment, fatigue, contaminated food, seasonal changes, physical exertion, infrequent medication and disturbances in everyday life may contribute to migraine attack in different people. High incidence of migraine in female population is associated with liable disabilities and reduction in quality of life<sup>23</sup>.

The prevalence recorded for Psychotic headache was 3.5% among all the headache types with occurrence of 3.7% in female and 3.4% in male population and the ratio of urban to rural population was 3.8% to 3.3% with level of significance  $P \geq 0.05$ . The main cause of this type of headache was psychotic behavior along with occurrence of hopelessness and low labile mood. The study indicated that just 0.8% females were suffering from headache due to overuse of medicines while the proportion of this incidence was higher in male population (2.2%). Similarly, the people living in rural areas develop this headache less likely (0.9%) as compared

to urban citizens (2.1%). Overall prevalence of Medication over use headache was recorded to be 1.5% which indicated that the trend of over use of medication is not so common. People often used to use over the counter (OTC) medications in excess at irregular time intervals, which resulted in headache. Moreover, male people also claimed to develop headache due to loss of patient compliance while taking their medications. Evers and Jensen reported that the trend of Medication overuse headache varies from 0.7-1.7%, throughout the World. Moreover, this type of headache is observed in 15% of hospitalized patients treated in different clinical centers<sup>24</sup>.

Spinal headache was found to be 2.7% among all other types with higher ratio in males (4.5%) as compared to females (0.8%) with significance level of  $P \leq 0.001$ . However, rural people developed Spinal headache more (3.4%) as compared to urban society (2.0%) with non significant results ( $P \geq 0.05$ ). Cervicogenic headache was the least occurring (1.4%) type of headache. It was found equally in males and females but its occurrence was more in the rural areas (1.7%) as compared to urban population (1.0%). Stiffening of neck and shoulder pain due to any reason might be the leading cause of cervicogenic headache. Past studies indicated that the occurrence of cervicogenic pain among adults was expected to be 1.7% which resulted in limitation of working abilities to certain extent<sup>25</sup>. Lifting of heavy weights without considering health care protocols was a major cause of spinal and cervicogenic headache because during study, it was observed that the people often claimed the onset of both of these headaches on lifting heavy objects. However, spinal headache was also reported in those people who undergone spinal surgery or had backbone illness.

## CONCLUSION

The highest prevalence of different headache types in the Punjab province may reflect the complicated life style of people with lack of awareness and proper guidelines about health related issues. This urgently requires the proper management and control of headache to avoid major mishaps.

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