

# Prevalence of Headache among Adult Population in Urban Varanasi, India

Hari Shankar, Kshitij Raj, Priya Keshari, Pragya Singh

**Abstract**—Headache is one of the most ubiquitous and frequent neurological disorders interfering with everyday life in all countries. India appears to be no exception. Objectives are to assess the prevalence of headache among adult population in urban area of Varanasi and to find out factors influencing the occurrence of headache. A community based cross sectional study was conducted among adult population in urban area of Varanasi district, Uttar Pradesh, India. Total 151 eligible respondents were interviewed by simple random sampling technique. Proportion percentage and Chi-square test were applied for data analysis. Out of 151 respondents, majority (58.3%) were females. In this study, 92.8% respondents belonged to age group 18-60 years while 7.2% was either 60 year of age or above. The overall prevalence of headache was found to be 51.1%. Highest and lowest prevalence of headache was recorded in age groups 18-29 year & 40-49 year respectively. Headache was 62.1% in illiterate and was 40.0% among graduate & above. Unskilled workers had more headache 73.1% than other type of occupation. Headache was more prevalent among unemployed (35.9%) than employed (6.4%). Females had higher family history of headache (48.9%) as compared to males (41.3%). Study subjects having peaceful relation with family members, relatives and neighbors had more headache than those having no peaceful relation.

**Keywords**—Family relationship, headache, neighbors, ration cards.

## I. INTRODUCTION

PRIMARY headache, especially migraine and tension-type headache (TTH) are common in the general population worldwide [11], [2]. The current headache prevalence is 46% in the adult population worldwide [10]. Asians have a lower prevalence than Europeans and North American [9], [10]. The primary headache disorders, mostly migraine and TTH are of importance to global public health which leads widespread ill health and impaired quality of life [2], and causes loss of work productivity [9]. Improper treatment of migraine or TTH can lead to Medication-Overuse Headache (MOH), an aggravated disorder which, by definition occurs on  $\geq 15$  days/month and is a major additional contributor to global disability. The Global Burden of Disease Study, 2013 found migraine to be the sixth highest cause of disability Worldwide and MOH the 18th in terms of years of life lost to disability (YLDs) [21]. Collectively, headache disorders rank third [4]. Headache

Prevalence is poorly described in many large and populous regions of the world. Nowhere is this more obvious than in the South-East Asia Region (SEAR), the only one of the World Health Organization's six world regions for which no nationwide data has yet been gathered about the prevalence of headache disorders or their impact on society [6]. Most of studies regarding headache focused about migraine, although it was not found to be common disorder [10], [9]. Globally, the prevalence of the adult population with active headache disorders are 46% for headache in general, 11% for migraine, 42% for TTH and 3% for chronic daily headache [10]. Studies conducted in Europe and United States of America show that 6-8% men & 15-18% women had migraine [4], [6]. A similar pattern probably exists in Central America. In Puerto Rico, for example, 6% of men and 17% of women have been found to have migraine [5]. In South America, prevalence appears only slightly lower [8]. A survey in Turkey suggested even greater prevalence 9% in men and 29% in women [7]. Migraine appears less prevalent, but still common, elsewhere in Asia (around 8%) and in Africa (3-7%) in few communities based studies [10]. Tension type of headache affects 2/3<sup>rd</sup> adult males and more than 80% females in developed countries [3]. Rural population based studies in developing countries show low headache profile as compared to other type of diseases [9]-[11].

Only few studies have been described headache disorders in Indian context. These studies were based on neuro-epidemiological survey [5].

## II. METHODOLOGY

### A. Study Design

A cross sectional study was conducted in Urban Health Centre (UHC) Sunderpur in the field practice area of Department of Community Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

### B. Sample size

The sample size was calculated using the following formula.  $N = z^2 P (1-P) / e^2$  where N = sample size, z = statistics for  $\alpha$  error, P = estimated prevalence of headache. Assuming alpha error at 10%, z 1.96 and estimated 63 percent prevalence of headache reported in a study conducted in Karnataka, India. Sample size was found to be  $N = (1.96)^2 * (0.63*0.37) / (0.1*0.1) = 89$ , and 1.5 design effect and 10% non respondent rate the final sample size was found.  $89*1.5 / (1-0.1) = 149$  but we interviewed 151 respondents.

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### C. Sampling Procedure

Simple random sampling procedure was adopted to select respondents after inclusion and exclusion criteria. Verbal informed consent was taken. The total 151 respondents were analyzed using SPSS. Proportion, percentage and Chi Square test were applied.

### III. RESULTS

Demographic characteristics of respondents as shown in Table I indicate out of 151 respondent's majority were females (58.3%). Maximum 35.8% respondents were in age group 18-29 year of age and only 7.2% in either 60 year or above. Majority of subjects belonged to upper class 72.2% and only 27.8 % were in lower class (having red & white ration cards).

TABLE I  
DEMOGRAPHIC PROFILE

Characteristics	Frequency	Percentage
Age	18-29	54
	30-39	41
	40-49	25
	50-59	20
	≥60	11
Sex	Male	63
	Female	88
Education	Illiterate	29
	Primary	29
	High School	35
	Intermediate	23
Occupation	Graduate & above	35
	Unemployed	56
	Student	22
	Skilled Worker	19
	Unskilled Worker	26
	Service	12
Ration Cards	Business	16
	Yellow (UC)	109
	Red (ULC)	22
	White (LC)	20

SES: Socio Economic Status, UC: upper class, ULC: upper lower class (below poverty line), LC: lower class (poorest of the poor)

According to Table II, age group 18-29 year was found to be more susceptible for headache than other age groups. Prevalence of headache decreases with increasing age only up to 49 year. Thereafter, it rises up to 59 year and again decreases with increasing age 60 year & above. Respondents educated up to high school had 62.9% headache while Intermediate (12<sup>th</sup> Class) and graduate had 60.9% and 40.0% respectively. It shows that headache decreases with increasing level of education.

Proportion of headache with age, as shown in Fig. 1, indicates that maximum proportion of headache is present in age group 18-29 years of age while lowest in age group 60 and above. Percentage of headache according to sex, as shown in Fig. 2, indicates that more than 40% females having headache as compared to males 20%. Prevalence of headache was 28.2% among respondents who were educated up to High School. In illiterate headache was found to be 62.1%.

Headache was more prevalent among unemployed (35.9%) followed by employed (6.4%). Females had higher family history of headache (48.9%) as compared to male (41.3%). More than 92.7% study subjects had peaceful relation with family member, relative and neighbors. Of which half of the respondents had headache. Study further indicated that females had good relationship with other family members, relatives and neighbors as compared to males.

TABLE II  
DISTRIBUTION OF HEADACHE

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Characteristics	Present (N& %)	Absent (N& %)	Total (N& %)	p-value
Age				
18-29	33(61.1%)	21(38.9%)	54(35.8%)	0.232
30-39	17(41.5%)	24(58.5%)	41(27.1%)	
40-49	10(40%)	15(60%)	25(16.5%)	
50-59	12(60%)	8(40%)	20(13.2%)	
≥60	6(54.5%)	5(45.5%)	11(7.3%)	
Sex				
Male	28(35.9%)	35(47.9%)	63(41.7%)	0.134
Female	50(56.8%)	38(43.2%)	88(58.3%)	
Education				
Illiterate	18(62.1%)	11(37.9%)	29(19.2%)	0.058
Primary	10(34.5%)	19(65.5%)	29(19.2%)	
High School	22(62.9%)	13(37.1%)	35(32.2%)	
Intermediate	14(60.9%)	9(39.1%)	23(15.2%)	
Graduate	14(40%)	21(60%)	35(23.2%)	
Occupation				
Unemployed	28(50%)	28(50%)	56(37.1)	0.266
Student	11(50%)	11(50%)	22(14.6%)	
Skilled	8(42.1%)	11(57.9%)	19(12.6%)	
Unskilled	19(73.1%)	7(26.9%)	26(17.2%)	
Service	5(41.7%)	7(58.3%)	12(7.9%)	
Business	7(43.8%)	9(56.2%)	16(10.6)	
Ration Cards				
Yellow (UC)	58(53.2%)	51(46.8%)	109(72.2%)	0.531
Red (ULC)	12(54.2%)	10(45.5%)	22(14.6%)	
White (LC)	8(40%)	12(60%)	20(13.2%)	
Relationship with family member				
Peaceful	75(51.7%)	70(48.3%)	145(96%)	0.934
Not Peaceful	3(50%)	3(50%)	6(4.0%)	
Relationship with relatives				
Peaceful	77(53.1%)	68(46.9%)	145(96%)	0.080
Not Peaceful	1(16.7%)	5(83.3%)	6(4.0%)	
Relationship with neighbors				
Peaceful	77(52.9%)	66(47.1%)	140(92.7%)	0.292
Not Peaceful	4(36.4%)	7(63.3%)	11(7.3%)	

APL: Above Poverty line; BPL: Below Poverty Line, POP: Poorest of the Poor.

### IV. DISCUSSION

The overall prevalence of headache in this study is 51.7%. This is higher than that estimated by [10] (46%), [15] (30.1%), [12] (21.6%) and lower than found in other studies like [16] (63.9%), [19] (74.2%), [17] (63.9%), [14] (81.7%), [18] (85.4%). The variation may be due to differences in geographical, population attributes of the study areas.

The female preponderance of headache is seen in this study (56.8%) similar to [16] 43.3%, [19] (87.7%), [17] (59.9%). There is no much difference of headache prevalence in illiterate 62.1% and respondents educated up to high school (62.9%) and Intermediate (12<sup>th</sup> class) (60.9%) but it is comparatively low in subjects educated up to primary level (35.5%) and graduated or above (40%). Similar study shows findings of headache [16] with illiterate (32.6%), primary (7.9%), high school (47.1%), and graduate or above (12.5%). Other study shows [13] that subjects having secondary school (8<sup>th</sup> class) and primary school education had 33.8% headache while those who were educated up to high school and intermediate (12<sup>th</sup> class) and graduate had 34.3% and 26.4% respectively. In present study prevalence of headache was found to be 50% in unemployed, 50% in students, 42.1% in skilled workers, 73.1% in unskilled workers, 41.7% in service and 43.8% in business. It is different from study of Kulkarni et al. having prevalence of headache in unemployed 7.9%, unskilled workers 1.5%, skilled or semiskilled workers 58.8%, clerical, shop owner, farmer 26.8%, professional or semiprofessional 5.1% [16]. It may be due to many factors like education and employment type and levels of the study areas, etc.

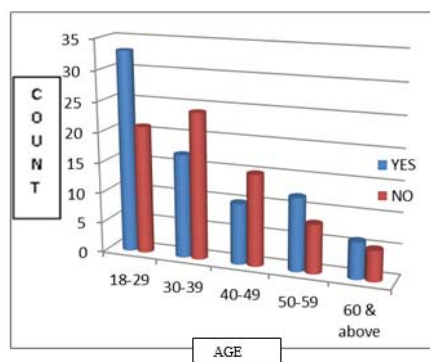


Fig. 1 Proportion of Headache According to Age

According to Global year against headache, Oct2011-Oct 2012 Epidemiology [22], headache is the most prevalent neurological disorders and among the most frequent symptoms seen in general practice. 50% of the general population has headaches during any given year which is close to 51.7% of this study. There is an equal sex ratio for TTH prevalence and in this study also, there is no significant difference in prevalence of headache in males and females.

Rasmussen et al. [1] state that corresponding prevalence of TTH were 63% and 86% in men and women respectively. Our study also shows similar pattern of headache in males and females. Rasmussen et al. [1] also state that the prevalence of TTH decreased with increasing age which is different than our study which can be attributed to the factors like status of income, unemployment, elderly care, social customs which is different in the studies done.

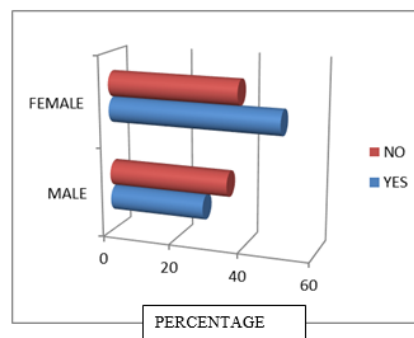


Fig. 2 Percentage of Headache According to sex

Naglaa A. El-Sherbiny et al. [20], in a study of Egypt, showed the 1-year headache prevalence 51.4 % which is very close to our study (51.7%), also Headache disorders were more common in females similar to our study.

A study of 180 participants in the validation sample in Pakistan by Herekar et al. [14] showed that out of 180 participants 147 (81.7%) reported headache in the last year. This is much higher than most of the studies and may be due to the harsh and terrorizing living conditions prevailing in Pakistan compared to India.

## V.CONCLUSION

The study showed that headache is more prevalent in younger age group (18-29 years). A decreasing trend of headache with increasing age was observed but it is not statistically significant. As far as gender is concerned, prevalence of headache is higher in females than males. Unskilled persons have higher prevalence of headache than other occupation. To prevent future epidemic of headache, policy makers and programme implementer will have to adapt effective strategy for prevention and control of headache among younger age groups in general and female in particular.

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