

## EPIDEMIOLOGICAL FINDINGS ON PREVALENCE OF MENTAL DISORDERS IN INDIA

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### ABSTRACT

*Fifteen epidemiological studies on psychiatric morbidity in India have been analysed. National all-India prevalence rates for 'all mental disorders' and five specific disorders have been worked out. The national prevalence rates for 'all mental disorders' arrived at are 70.5 (rural), 73 (urban) and 73 (rural + urban) per 1000 population. Prevalence of schizophrenia is 2.5/1000 and this seems to be the only disorder whose prevalence is consistent across cultures and over time. Rates for depression, anxiety neurosis, hysteria and mental retardation are provided. Urban morbidity in India is 3.5 percent higher than the rural rate, but rural-urban differences are not consistent for different disease categories. In Hindi speaking north India, mental morbidity amongst factory workers is two and half times that of the non-industrial urban inhabitants and five times the rural morbidity. The present data are expected to serve as baseline rates for mental health planners and for psychiatrists interested in epidemiological studies.*

*Key words : National prevalence rate, all mental disorders, specific disorders, rural-urban difference, urban industrial morbidity, schizophrenia rate stability*

Mental health planners in India have from time to time estimated the prevalence of mental disorders in the country. The data helps in understanding the status of mental health in the country and in planning for prevention and treatment of disorders. The Bhore Committee (Govt. of India, 1946) extrapolated from rates in U.K. and U.S.A. and concluded that mental patients requiring hospitalization in India be taken as 2 per 1000. Again in 1966, the Mental Health Advisory Committee of the Govt. of India suggested a probable prevalence of mental illness of 20 per 1000 population in general, 18 per 1000 for semi-rural and 14 per 1000 for rural areas (Elnaggar et al., 1971). A logical method of estimating overall national prevalence rates and factors influencing these would be to make the necessary deductions from a comparative analysis of epidemiological studies already made. The present article seeks to do this.

From about 1960, epidemiological studies

of psychiatric morbidity in different samples of the Indian population have been conducted. The present paper analyses fifteen epidemiological studies to clarify the following : i) national all-India prevalence rate for 'all mental disorders'; ii) national prevalence rates for specific disorders; iii) rural-urban difference; iv) morbidity in urban industrial population as compared to rural and urban general populations & v) stability of schizophrenia rate.

### MATERIAL AND METHOD

Sample : The epidemiological studies analysed in the present study are :

Uttar Pradesh : Sethi et al., 1967, 1972, 1974, 1979; Dubey, 1970.

Bihar : Bhaskaran et al., 1970.

West Bengal : Elnaggar et al., 1971; Nandi et al., 1975, 1979, 1980.

Gujarat : Shah et al., 1980.

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Tamil Nadu & Pondicherry : (Tamil speaking region) : Verghese et al., 1973, 1974; Premrajan et al., 1993.

Delhi : Ganguli, 1968.

The above list contains the major Indian studies in this field. If any study has been left out, the omission is inadvertent. One such omission brought to the notice of this author is Dr. Ajita Chakraborty's study on social stress and mental health in Calcutta (Chakraborty, 1990). The omission is regretted. Carstairs and Kapoor's study (1976) has not been included in this analysis on methodological considerations. The authors write that "the results of this study cannot be strictly compared with those obtained in other studies carried out in India or abroad".

Methodological Issues : Ganguli (1968), Shah (1980) and Nandi (1980) have expressed reservations about inter-study comparison. A common feature of the studies listed above is similarity of design - all conducted in three phase or steps : i) delineation of the sample and initial contact with subjects including collection of background demographic data; ii) identification of suspected cases, usually on the basis of interviews and questionnaires by non-psychiatric personnel like social workers, and sometimes through psychological tests. Physical examination of suspected cases by medical personnel is part of this phase. iii) Psychiatric examination and clinical diagnosis and classification of suspected cases is the third stage. However, differences and sources of error are several. For example, in defining a psychiatric case, the investigators did not follow any uniform operational definition of a case, a point specifically underlined by the W.H.O. Expert Committee on Epidemiology of Mental Disorders (WHO, 1960). Rather, the psychiatric assessment as made on the basis of personal interview by the psychiatrist provided the major and perhaps sole guideline for diagnosing the subject. In this matter, the point mentioned by Ley (1970) deserves attention, namely, that psychiatrists tend to develop diagnostic stereotypes. They have personal preferences in ways of describing patients and often their own

personality traits affect diagnosis and prognosis, thus lowering validity of assessments. Absence of a full-time professionally qualified statistician in many investigating teams may have affected sampling, analysis and tabulation of results. Questionnaires and schedules used for screening out symptom-free individuals and detecting suspected cases were usually improvised by individual team members. Errors may creep in here, leading to false negatives.

The above are real problems in any psychiatric assessment, more so in field studies. On the positive side, however, team leaders of these Indian study groups were highly experienced and trained in their disciplines in India and abroad like England and U.S.A. Many were chairpersons of university and medical college departments. The projects were carefully scrutinized and monitored by expert groups of funding agencies like the I.C.M.R. For classification, these studies followed the WHO's International Statistical Classification of Diseases (ICD) or the APA's Diagnostic and Statistical Manual of Mental Disorders (DSM), revised from time to time.

Overall, a certain homogeneity in these studies exists that supports a pooling of these for arriving at larger inferences of some importance for the Indian society.

## RESULTS

Prevalence rates are given for 'All Mental Disorders' and for five specific disorders, viz. schizophrenia, affective disorders (depression - psychotic and neurotic), anxiety neurosis, hysteria (dissociative & conversion) and mental retardation. 'All mental disorders' or total mental disorders include all categories of recognised psychiatric syndromes - psychoses, neuroses, personality disorders, mental retardation, alcoholism etc. On the principle of higher inter-psychiatrists agreement for broader diagnostic categories (see Ley, 1970 and Beck et al., 1962 for studies on reliability of specific mental disorders and their groupings), the 'All mental disorders' rate, being the broadest category, is

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expected to have higher reliability than rates for specific disorders.

In epidemiological studies, rural and urban data are usually shown separately on the understanding that there is a difference here. To test the situation more closely, results of three pairs of rural and urban studies made by the same investigating team, with same tools, similar methodologies and in the same neighbourhood have been compared. Conclusions from a comparison of such pairs of studies would be more reliable. Table 1 presents results of three such pairs of studies.

**TABLE 1**  
**RURAL AND URBAN MORBIDITY RATES**  
**FROM PAIRED STUDIES (RATE/1000 :**  
**ALL MENTAL DISORDERS)**

Region	Investigator	Rate Rural	Rate Urban	Ratio Rural to Urban Morbidity (Rural=100)
West Bengal	Nandi et al. (1980)	142	207	100 : 146
U.P.	Sethi et al. (1972, 1976)	39	73	100 : 185
U.P.	Dube (1970)	18	25	100 : 139

Table 1 shows that urban morbidity rates are substantially higher than rural rates, more by a factor of about 1.6, range of 1.4 to 1.9. For rural rate as 100, the mean urban rate is 157. In view of this finding, subsequent tables will present data for rural and urban areas separately.

i) All mental disorders (national) : Table 2 gives the Indian national prevalence rates for all mental disorders, computed from the epidemiological studies being considered here. Table 2 shows the all-India national rate (rural+urban) to be 73/1000, rural rate as 70.5 and urban rate as 73. Thus the urban rate is higher than the rural, but the difference is only 3.5%.

**TABLE 2**  
**NATIONAL PREVALENCE RATES**  
**FOR ALL MENTAL DISORDERS**  
**(ALL INDIA RATE/1000 POPULATION)**

	Rural	Urban	Rural+Urban
Median	70.5	73	73
Range	18-142	25-207	18-207
N	6	9	15

Rural/Urban Ratio = 100 : 103.5

Dohrenwend and Dohrenend (1974) have estimated 'true prevalence' rates of treated and untreated functional psychiatric disorders in different continents. These are presented below for purpose of comparison.

Site	Rural Median/1000 Range No. of studies	Urban Median/1000 Range No. of studies
North America	173/1000 17-690 12	210/1000 18-320 12
South America	-	184 175-298 4
Europe	119 11-286 15	155 10-330 5
Middle East	99 45-149 3	- 474 1
Africa	- 400 1	- 118-450 2
Asia	10 4-540 14	18 8-30 3
Australia	- 54-68 2	259 254-294 3

From the above data no overall pattern of prevalence of mental illness is seen in different parts of the world. Further, the Indian urban value of 73/1000 is about four times more than the median Asia rate, but one-third of the North America rate and about half of Europe. Substantial differences also exist for rural rates in India and other countries. It seems that the prevalence of mental illness is not uniform across cultures but is determined by the unique combination of biological, socio-cultural, psychological and other factors obtaining in each society.

ii) Specific disorders (national) : Table 3 gives the prevalence rates in the country for five disorders.

The table is self-explanatory. The following additional points are made.

For schizophrenia, the national rate is 2.5 per 1000 and 10 out of 13 studies or 77% show a rate of 4.3 or less. The category affective

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**TABLE 3**  
**NATIONAL PREVALENCE RATES**  
**FOR FIVE MENTAL DISORDERS**  
**(RATE/1000 MEDIAN, RANGE AND NO. OF STUDIES)**

1. Schizophrenia	Rural : 3.6	Rural+Urban
	Urban : 2.5	2.5
		1.1 - 14.2
		n=13
2. Affective disorder depression (psychotic and neurotic)	Rural : 37.4	34
	Urban : 33.7	0.5 - 53
3. Anxiety neurosis	Rural : 15	n=15
		16.5
		11 - 70
4. Hysteria	Urban : 16	n=8
	Rural : 7	3.3
		2.5 - 17
5. Mental retardation	Urban : 3.1	n=7
	Rural : 3.7	5.3
		1.4 - 25.3
	Urban : 9	n=10

disorders combines all depression data, neurotic and psychotic. The all-India value is 34 per 1000 and 12 out of 15 or 80% of the studies give rates below 40 per 1000. Separately, for psychotic depression classified under MDP and for neurotic depression, rates are as follows : psychotic depression : mdn : 7.8 per 1000, range 0.5 to 40 (n=9). Neurotic depressive reaction : mdn : 22.8 per 1000, range 4.7 to 50 (n=8). Thus reactive depression rate is three times more than psychotic depression. Mental retardation has a national value of 5.3 per 1000 and 80% of the scores fall below 10.5/1000. The most widely prevalent disorders are depression and anxiety, in that order. Rural-urban differences are discussed subsequently.

Psychosomatic disorders are not shown separately in these studies, except in the Delhi study on industrial workers (40/1000) and for a West Bengal rural community (9.4/1000). Actually, some investigators (e.g. Elnagger, 1971; Sethi, 1974) mention having excluded psychosomatic cases from their studies. The significance of somatic complaints in psychological disorders is seen from the following comment : "the highest prevalence rates in the Kota sample were found to be those of the two 'somatic' category of symptoms"; 'pains and aches', and 'bodily heat and cold' (Carstairs and Kapoor, 1976).

iii) Rural - urban difference : Table 4 presents a consolidated version of rural-urban ratios at the national level. Table 4 indicates the following: i) urban rate is substantially less than rural rate for schizophrenia (by 31%) and for hysteria (by 56%); ii) mental retardation prevails much more in urban

**TABLE 4**  
**RURAL - URBAN PERCENTAGE DIFFERENCES**  
**FOR NATIONAL PREVALENCE RATES**  
**(RURAL RATE = 100)**

	Rural/Urban Ratio
Schizophrenia	100/69
Affective Disorder	100/90
Anxiety Neurosis	100/106
Hysteria	100/44
Mental Retardation	100/243
All Mental Disorders	100/103.5

areas - more by 143%; iii) marginal rural-urban differences of 10% or less are seen for affective disorders (urban 10% less) and for anxiety neurosis (urban 6% more); iv) for 'all mental disorders', rural-urban difference is only minor - urban exceeds rural prevalence rate by 3.5%.

Thus fairly large rural - urban differences exists for schizophrenia, hysteria and mental retardation; not for anxiety and depression. Rural - urban difference seems to depend on the disease category and is not uni-directional.

Other scholars also have investigated the rural - urban differences. Dohrenwend and Dohrenwend (1974) noted that in eight out of ten studies reviewed, the urban rate was higher than the rural rate, but the median difference for the total rates was only 1.1%. The present finding of a difference of 3.5% is therefore in accord with these results. Nevertheless the rural-urban difference is a vexed issue, often giving contradictory results. Gallagher (1987), for example, noted that schizophrenia is evenly distributed between rural and urban areas but affective disorders are more in rural areas. Table 4 shows schizophrenia to be higher in rural area though affective disorder rates are similar.

Reasons are several, for India particularly. The classification of subjects as rural and urban is done mostly on the basis of geographical location at the time of study and with no other

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criteria for analyzing such background. Further, considerable movement of population between villages, townships and cities makes clearcut rural - urban demarcation difficult. Lastly, extensive social networking in large chunks of urban populations enable them to maintain their traditional kinship and caste relations and cope with the stress of city life. They create mini - communities like they had in their villages. In addition, many maintain their village links by regular visits for vacations and for festivals etc. How do these persons fit in the dichotomous classification of rural - urban? Not easily. The investigator should therefore be prepared for unexpected results about rural - urban differences in India.

iv) Urban industrial morbidity : Industrialisation is an additional dimension in the national economy and comparison of rural, urban (general) and urban (industrial) populations is needed. Delhi and Ranchi (Bihar) factory workers (Ganguli, 1968; Bhaskaran, 1970) are Hindi-speaking north Indian and linguistically and culturally similar to the U.P. population and the three are comparable. The rates (all mental disorders) are : 29/1000 (U.P. rural); 55 (U.P. urban) and 145 (Delhi+Bihar; Hindi, north India, industrial). These rates give a ratio of 1:1.9: 5.0. In the Hindi speaking area, factory workers have a prevalence rate two and a half times more than rates for general (non-industrial) city dwellers and five times the rural morbidity. Migrant workers from other linguistic states may have a prevalence rate that is five times the national rate (e.g. South Indian workers in Ranchi - 370 per 1000). These results apply particularly to dead-end jobs. In modern automated factories, mental health problems are different (e.g. see WHO Technical Report No.183, 1962 for a background discussion).

v) Stability of schizophrenia rates : Of the prevalence rates noted above, as of now only rate for schizophrenia seems to have a stability over time and across cultures. The median rate for schizophrenia was 2.9/1000 in fifteen pre-1950 studies in nine countries - USA, Japan, Finland, Sweden, Denmark, Germany, China,

Britain & Norway (Primrose, 1962; Ganguli, 1968). Crocetti and Lemkau (1967) writing about USA and Yugoslavia say that with diagnosed and unknown schizophrenics in the population, "the prevalence figure approximates 290/100,000 population", that is, 2.9/1000. The present Indian national prevalence rate of 2.5/1000 is similar to Crocetti and Lemkau's estimate and the pre-1950 world value. In 70% of Indian epidemiological studies, rates were less than 3/1000. It is therefore reasonable to assume that in many countries in the world, including India, and for unselected general populations, schizophrenia rate shall be in the neighborhood of 3/1000 and rarely go beyond 0.5% of population. However, as psycho-social condition changes and new studies are published, the figures should be reevaluated in the light of fresh data.

Sethi (1974) observed thus about one of his own studies : "the prevalence rate of 67/1000 found in this study is indeed a high figure for a country with a population of 550 millions... In fact our prevalence rate would have been higher if cases of psychophysiological reactions and personality disorder had been included'. In view of these observations, it is felt that the national rate of 73/1000 for 'all mental disorders' arrived at in the present analysis is not to be constructed as inordinately high. This value of 73/1000 derived from major epidemiological studies of the last 40 years may be looked upon as a baseline rate and used for evaluation of mental health data in India in the coming years. It is still uncertain for what proportion of the nearly 70 million Indians, 7.3% of a 950 million population, provision for psychiatric treatment including hospitalization should be made. The issue is complicated because of the practice in this country of different forms of treatment - allopathic, homeopathy, ayurveda, yoga, tantra etc. This need for psychiatric treatment and ways and means of fulfilling that need for Indians have to be assessed separately. It is hoped that the present results will be useful to mental health planners and also for psychiatrists interested in epidemiological studies. A full report on this study

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that includes regional differences, high risk groups etc. may be published separately.

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