

# INCIDENCE OF SCHIZOPHRENIA IN AN URBAN COMMUNITY IN MADRAS

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## SUMMARY

*The incidence rate of an illness is a vital epidemiological measure for investigating etiology. Incidence estimates of schizophrenia from different parts of the world have shown variations, due to differences in the diagnostic criteria, measurement techniques and operational definitions used. In contrast to the prevalence studies in India, incidence surveys have been sparse and the rates obtained relatively higher as compared to the west. As part of an ICMR Longitudinal Study of Functional Psychoses in an urban community in Madras, the incidence of schizophrenia was estimated in the slums. The case finding methods included a door to door survey and a leakage study. Cases defined using standardized diagnostic criteria, were identified using IPSS and PSE. The incidence rate was 0.21/1,000 by the community survey and 0.41/1,000 by the leakage study. This paper describes the study and discusses its relevance in India.*

## INTRODUCTION

The incidence rate is an important estimate in any investigation to determine the etiology of an illness. Known by the terms Cumulative Incidence Rate (Miettinen, 1976; Morgenstern et al, 1980) or Attack Rate (Littenfeld, 1980), it is defined as "the proportion of new cases of a disease arising in a population initially free of the illness, within a specified time period".

## REVIEW OF LITERATURE

There are fewer studies on the incidence as compared to the prevalence of schizophrenia. Published data on the incidence of schizophrenia have been reviewed by Hafner et al (1987) and Eaton et al (1988). Differing diagnostic criteria, measurement techniques, operational definitions and methods of estimating rates have been used. Higher estimates have been reported from the United States, Germany and Ireland (range 0.5 - 0.7 /1,000) as compared to the rates from Scandinavia and England (0.1 - 0.2/1,000). Jablensky (1991) reports that incidence rates reported globally, do not vary as much as prevalence rates.

Most incidence studies have estimated the rate of new cases from case registers. In a Swedish field study by Hagnell (1966), an incidence rate of 0.2/1,000 was estimated, indicating that 100,000 people would have to be examined to find 20 cases. Nuallain et al, (1987) reported on the first incidence of schizophrenia in Ireland by means of standardized case finding methods. At Mapperley Hospitals, Cooper et al (1987) conducted a leakage study by extending the case finding network to other medical and social service agencies in the community, in addition to the hospital survey for incidence cases of schizophrenia. This was part of the WHO collaborative Study, which aimed at a cross cultural comparison (Sartorius et al, 1986).

Incidence rates reported in India have been higher than those reported in the West. Incidence studies have been reported from Chandigarh (Varma et al, 1989) and rural West Bengal (Nandi et al, 1976). In Chandigarh, a center in the WHO Collaborative study of the Determinants of outcome of Severe Mental Disorders, the incidence es

timates were 0.3/1,000 in the urban and 0.42/1,000 in the rural population. In West Bengal, new cases of mental illness were identified in the community using a screening schedule and consensus clinical diagnoses. Only 1 new case of schizophrenia was identified in a population of 1078, giving an incidence rate of 0.93/1,000. It is difficult to draw much inference from this study. The paucity of incidence studies in India could be due to absence of demarcated catchment areas for health service delivery, lack of case registers, and constraints in conducting a field survey.

A longitudinal study of Functional Psychoses was undertaken in two urban areas of Madras city in the vicinity of Madras Medical College and the Government General Hospital. An initial field survey of a population of 1,01,229 identified prevalence cases of Functional Psychoses using standardized screening and diagnostic methods (Padmavati et al, 1988). After completion of the study, the prevalence rate of Functional psychoses was estimated at 5.56/1,000 (rate 3.43/1,000 in the age group 15-54 years). The rate for schizophrenia was 2.62/1,000 (n = 265), the age specific rate in group 15-54 years being 3.87/1,000. Nearly one third of this cohort was untreated despite psychiatric facilities available nearby. The prevalence of schizophrenia was higher in slums (3.43/1,000) in contrast to non-slum areas (2.01/1,000). The study consequently focused on estimating incidence of schizophrenia in slums. This paper presents the findings of the incidence study.

## METHODOLOGICAL ISSUES:

### Catchment Area:

The catchment areas comprised of the slums of Triplicane and Chintadripet, which were surveyed during the prevalence study. These areas, located in the coastal parts of Madras, were characterized by over-crowding, poor hygiene, lack of proper sanitation facilities and electricity. There were 4 major mental health facilities run by the State Government within a 6 kilometer radius of the slums.

**Population:**

The total population in the catchment area was 43,097. The population at risk screened for incidence cases was 25,661. This was obtained by excluding all cases who were identified as prevalence cases (n=195) (who therefore would not qualify to be incidence cases), and all persons below 15 years age. Most of them were employed as manual laborers, who earned their daily wages through unskilled work. Being in the coastal area, most were fisherfolk. The literacy level was low. People lived in huts and semi-thatched shelters. The general health status was poor, with high co-morbidity of infections, chronic physical illnesses, alcohol and drug abuse.

**Instruments:**

1. Indian Psychiatric Survey Schedule (IPSS): This structured survey schedule was developed and standardized by Kapur et al (1974). It enquires into the presence of 124 psychiatric symptoms and 10 historical details. It is administered by a trained field worker and a psychiatrist. It has been used extensively in urban and rural areas in India.

2. Present State Examination (PSE-9th Edition): Developed by Wing et al (1974), it assesses the presence and severity of psychopathology. This instrument has been translated into the local language (Tamil) in Madras during an earlier ICMR study on factors affecting course and outcome of schizophrenia (ICMR, SOFACOS). The research team was trained in the use of the PSE.

**Inclusion Criteria**

1. New cases of Schizophrenia (295) as per ICD-9 Criteria.
2. With the first onset of symptoms during the one year period between 1st July 1987 and 30th June 1988.

**METHODS**

Identification of new cases was essentially by a door to door survey. To prevent under-reporting, other techniques such as 'Leakage Study' were also used.

**1. Field Survey**

The survey was conducted in three stages involving screening, mental status examination and confirmation of diagnosis using the PSE. The survey was done by trained field staff. Every probable case, identified by IPSS, was further assessed in detail by two psychiatrists, independently and in some cases jointly, to derive an ICD-9 diagnosis using PSE. A pilot survey of 100 patients for inter-rater reliability showed good agreement between the staff (kappa value 0.86). A re-screening was done on completing the survey, to check for cases which may have been missed out as well as new occurrences after first contact. No cases were however detected during this period. Efforts were made to enlist the cooperation of slum dwellers through repeated contacts with leaders and key informants. Non-response rate, defined as refusals or failure to be interviewed despite several attempts by the research staff, was relatively low (0.6%).

**2. Leakage Study**

It was assumed that there could have been under-reporting of some cases during the survey as a consequence of social stigma. Hence contact was established with other psychiatric facilities and helping agencies. The leakage study involved:

- a. Scrutiny of records in the four major mental health services in the vicinity.
- b. Repeated contact with GPs, private psychiatrists, traditional and faith healers (Table 1). These practitioners were given an orientation on common psychiatric disorders, in particular, the functional psychoses. They reported new cases of schizophrenia during the period.

**TABLE 1****AGENCIES CONTACTED FOR THE LEAKAGE STUDY**

* A. MENTAL HEALTH SERVICES	4
@ B. MEDICAL HEALTH SERVICES	
General Practitioners	158
Private Psychiatrists	2
Practitioners of Traditional Indian medicine	30
@ C. FAITH HEALERS	30
* All lying within a 6 kms. radius of the catchment area.	
@ All within the study area.	

**RESULTS****Field Survey**

Nine cases of schizophrenia were confirmed by two independent psychiatrists. The incidence rate was 0.21/1,000.

**Leakage Study**

a. GPs identified and referred 7 cases of psychoses, but none of them fulfilled the inclusion criteria for schizophrenia. One case, referred by a private psychiatrist, was confirmed to be schizophrenia by consensus diagnosis.

b. No case was referred by the practitioners of Traditional Indian Medicine (Ayurveda, Siddha and Unani) and Homeopathy.

c. Faith healers reported 30 cases, of whom only 1 fulfilled the inclusion criteria. Others were mainly Hysterical reactions and Epilepsy.

d. Scrutiny of hospital records indicated four cases of schizophrenia who had not been previously identified during the survey.

In total, 6 cases of schizophrenia were identified by the leakage study. The incidence rate 0.14/1,000.

**Characteristics Of All New Cases**

Totally, 15 new cases [incidence] were detected. There were 9 females and 6 males most of whom were below 45 years (mean age of females: 26.124.07; of males: 22.63.9; age range 19-32). Eleven were married. All the women were housewives; three of the men were employed. All of them belonged to the lower socio-economic class and lived in nuclear families. Of the cases detected, 11 had been ill

for 6-9 months. Three patients were diagnosed as Catatonic Schizophrenia, eleven as Paranoid and 1 case, a 19 year old male with an illness duration of 7 months was diagnosed as Hebephrenia. 5 cases identified in the community had not sought any treatment until contact with the field staff.

### Incidence Rates

The total schizophrenia incidence rate as estimated by both techniques, namely the survey in the community as well as by "leakage" was 0.35/1,000.

## DISCUSSION

It is evident from our prevalence and incidence surveys that rates of occurrence of schizophrenia are high in slums. These surveys also indicate that a large number of persons remain untreated despite accessible and available psychiatric facilities. Fifteen new cases were detected in a population of 43,097, the incidence rate being 0.35/1,000. Standardized measuring techniques, 'community' as well as 'leakage' studies, consensus diagnosis confirmed with PSE, suggest that the higher incidence rates are true findings rather than artefacts. Our rates are similar to the studies carried out in Chandigarh and West Bengal. While it is hazardous to compare findings across cultures due to methodological and diagnostic variability, Jablensky (1991) has observed that the annual incidence rates vary globally from 1-4 persons /1,000.

A multiplicity of factors may contribute to our findings of increased incidence. These issues pertain to definitions and concepts of incidence rates; methods used in case detection, such as field surveys or hospital based records; and vulnerability of the population studied.

Several authors use administrative incidence as synonymous with attack rates and true incidence rates. Nuallain et al (1987) and Cooper et al (1987), based on studies using standardized procedures, have inferred that service incidence was close to or equal to community rates. If this inference could be generalized, one would expect that all new cases occurring in the slums would contact one of the services in the vicinity. This is not so in urban Madras, where a large number of untreated cases, who had never contacted a service facility, were identified. In addition, case registers and demarcated catchment areas for mental health delivery are non-existent. Therefore rates based on hospital records alone would not be true estimates of all new cases of an illness occurring in a given population.

Community surveys alone would also not provide a total incidence rate. The leakage study undertaken showed that some cases had been missed out during the survey. Thus, a combination of a community survey and a 'leakage' study, an extension of case finding methods to include 'helping agencies' would be essential to obviate under-reporting.

In this study, one factor that could contribute to a detection or performance bias is that we have studied a presumably vulnerable population. Slums are known to have an increased psychosocial stress factors, contributing

to an increased incidence of the illness. Perhaps a comparison with the incidence in non-slum areas was warranted but could not be implemented within the framework of the study.

The fact that a population of around 40,000 had to be screened over a one year period to detect 15 cases of schizophrenia, makes one wonder about the cost-effectiveness and the feasibility of using community surveys for estimating incidence in India. Hospital based studies or further case-control studies would be more suitable to determine etiology.

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## REFERENCES

- Cooper, J.E., Goodhead, D., Craig, T., Harris, M., Howat, J. & Korar, J. (1987) The incidence of schizophrenia in Nottingham. *British Journal of Psychiatry*, 151, 619-626.
- Eaton, W.W., Day, R. & Krammer, M. (1988) The use of Epidemiology for risk factor research in Schizophrenia: an overview and methodological critique. In *Handbook of Schizophrenia, Vol.3* [eds. M.T.Tsuang & J.C.Simpson], pp 169-204. Amsterdam: Elsevier.
- Hafner, H. & Heiden, W. (1986) The contributions of European case registers to research on Schizophrenia. *Schizophrenia Bulletin*, 12, 26-50.
- Hafner, H. (1987) Epidemiology of Schizophrenia. In *Search for the causes of Schizophrenia* [eds. H.Hafner, G.W.Gattaz, & W.Janzarik], pp 47-74. Heidelberg, New York: Springer Verlag Berlin.
- Hagnell, O. (1966) *A prospective study of the incidence of mental disorders*. Lund, Sweden Svenska Bokforlaget.
- Jablensky, A. (1991) Future strategies and perspectives in Schizophrenia research: Closing remarks. In *Search for the causes of Schizophrenia, Vol II* [eds. H.Hafner & G.W.Gattaz], pp 436-440. Heidelberg, New York: Springer Verlag Berlin.
- Kapur, R.L., Kapur, M. & Carstairs, G.M. (1974) Indian Psychiatric Survey Schedule (IPSS). *Social Psychiatry*, 9, 61-69.
- Lilienfeld, A.M. & Lilienfeld, D.E. (1980) *Foundations of Epidemiology*. New York: Oxford University Press.
- Miettinen, O.S. (1976) Estimability and estimation in case referent studies. *American Journal of Epidemiology*, 103, 226-235.
- Morgenstern, J., Kleinbaum, D.G. & Kupper, L.L. (1980) Measures of disease incidence used in epidemiologic research. *International Journal of Epidemiology*, 9, 97-104.

- Nandi, D.N., Ajmani, S., Ganguli, H., Banerjee, G., Boral, G.C., Ghosh, A. & Sarkar, S. (1976)** Psychiatric disorders in a rural community in West Bengal: An epidemiological study. *Indian Journal of Psychiatry*, 17, 87-90.
- Nuallain, M.N., O'Hare, A. & Walsh, D. (1987)** Incidence of schizophrenia in Ireland. *Psychological Medicine*, 17, 943-948.
- Padmavati, R., Rajkumar, S., Kumar, N., Manohar, A. & Kamath, S. (1988)** Prevalence of schizophrenia in an urban community in Madras. *Indian Journal of Psychiatry*, 30, 3, 233-239.
- Sartorius, N., Jablensky, A., Ernberg, G., Korten, A., Anker, M., Cooper, J.E. & Day, R. (1986)** Early manifestations and first contact incidence of schizophrenia in different cultures. *Psychological Medicine*, 16, 909-928.
- Varma, V.K. (1989)** *Final report of the Determinants of outcome of severe mental disorders - A seven year follow up study.* New Delhi: Indian Council of Medical Research.
- Wing, J.K., Cooper, J.E. & Sartorius, N. (1974)** *The measurement and classification of psychiatric symptoms.* Cambridge University Press.

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