

Prevalence and Diagnostic Pattern of Psychotic Disorders in a Rural Community of Southern Karnataka: A Door-to-Door Cross-Sectional Survey

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Abstract

Background: Mental health resources in India are concentrated in large cities and urbanized states, leaving rural populations underserved. Village life has traditionally been assumed to protect against mental illness, yet research has consistently shown that rates of psychotic disorders in rural areas equal or exceed those in urban areas, while treatment gaps are far wider. Community-based prevalence data from rural southern Karnataka are scarce.

Objectives: To estimate the prevalence of psychotic disorders in a rural community, to describe their diagnostic pattern, and to determine age- and sex-specific prevalence.

Materials and Methods: A community-based cross-sectional door-to-door survey was carried out in rural Hoskote taluk, Bengaluru Rural district, from July 2020 to June 2021 through the Department of Psychiatry of a rural medical college. All consenting residents aged 18–65 years in the enumerated households were screened. Instruments comprised a semi-structured sociodemographic proforma, the Mini International Neuropsychiatric Interview, the Psychosis Screening Questionnaire of Bebbington and Nayani, and the Structured Clinical Interview for DSM-IV Axis I Disorders for diagnostic confirmation. Data were analysed in SPSS version 21.0 using the Chi-square test, with $p < 0.05$ taken as significant.

Results: Of 958 individuals surveyed, 7 were diagnosed with a psychotic disorder, giving a point prevalence of 0.73%. Schizophrenia and delusional disorder accounted for 2 cases each (28.6% each), with one case each of brief psychotic disorder, substance-induced psychotic disorder and psychotic disorder due to a general medical condition (14.3% each). Prevalence declined across successive age bands, from 3.70% below 20 years to 1.08% at 20–30 years, 1.04% at 30–40 years and 0.42% at 40–50 years, with no cases beyond 50 years; this gradient was not statistically significant ($p = 0.327$). Prevalence was 0.70% in men and 0.77% in women ($p = 0.89$). The mean age of cases was 28.4 years against 39.3 years for the surveyed population.

Conclusion: The prevalence of psychotic disorders in this rural community was 0.73%, higher than most national estimates for schizophrenia alone, with affective-spectrum and organic psychoses contributing substantially. Cases clustered in the second to fourth decades and were evenly distributed between the sexes. Community-level case finding is feasible and necessary if the rural treatment gap is to be reduced.

Keywords: Psychotic disorders; Schizophrenia; Prevalence; Rural health; Community survey; India.

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Introduction

Health has been defined as a state of complete physical, social and mental wellbeing and not merely the absence of disease or infirmity [1]. Health systems in India, however, remain preoccupied with curative services and the prevention of physical disease, and mental wellbeing is the most neglected component of this

definition, particularly in rural districts. Rural India has its own social structure, characterized by strong kinship bonds and extended household living. For much of the last century, sociological and psychological writing treated village life as relatively immune to mental stress and to the disruptive effects of urbanization, the village being

viewed as an enlarged replicate of the joint family. This gave rise to an assumption that mental disorders would be less prevalent in rural populations. Compounding this, aberrant behaviour was widely attributed to spirit possession or to karma rather than approached as illness, which discouraged both recognition and help-seeking. Research has consistently shown more similarities than differences in the prevalence of psychotic disorders between rural and non-rural areas [2,3]. Indeed, the consequences of psychosis in rural settings are frequently worse, with higher rates of homelessness, mortality from other causes, remaining unmarried, living alone, lacking a caregiver, financial hardship, social stigma and unfavourable family attitudes [2,3].

Globally, an estimated 21 million people live with schizophrenia, and the majority reside in low- and middle-income countries where the treatment gap approaches 90% [4]. The Global Burden of Disease Study 2016 estimated the global age-standardized point prevalence of schizophrenia at 0.28%, with little variation across countries or regions [5]. Indian estimates have been broadly consistent: Loganathan and Murthy reported a prevalence of schizophrenia of approximately 3 per 1000 population [6], while the National Mental Health Survey of India 2015–16 estimated the prevalence of schizophrenia and other non-affective psychoses at about 0.3% [7]. Systematic under-reporting remains a major obstacle to psychiatric epidemiology in India; a community survey in southern India found that one-third of persons with schizophrenia had never presented to any formal health service [6].

The shortage of specialist mental health services in rural India is well documented, and primary care providers are frequently the only accessible option for rural residents. Rural community health centres are less likely than their urban counterparts to have on-site specialist mental health services, and referral to local mental health providers is correspondingly more difficult.

Despite carrying this expanded role, primary care physicians themselves report difficulty in recognizing and diagnosing psychotic disorders, which further widens the detection gap. Case ascertainment through facility-based sampling therefore systematically underestimates the true community burden, and door-to-door survey methods remain the most reliable approach in such settings.

Against this background there is a clear lacuna in the literature concerning psychotic disorders in the southern part of Karnataka, where no recent community-based enumeration has been published. The present study was therefore undertaken to estimate the prevalence of psychotic disorders

through a door-to-door survey of a rural community in Hoskote taluk, to describe the diagnostic pattern of the disorders identified, and to examine their distribution by age and sex. The sociodemographic and social determinants associated with caseness in this cohort are reported separately.

Materials and Methods

This community-based cross-sectional survey was conducted through the Department of Psychiatry of a medical college and research hospital serving Hoskote taluk, a rural area of Bengaluru Rural district in southern Karnataka, between July 2020 and June 2021. The study was approved by the Institutional Ethics Committee before commencement.

The study population comprised members of households in the rural catchment area of the institution. Households were enumerated and visited through a door-to-door survey, and all residents aged 18–65 years of either sex who gave written informed consent were enrolled. Individuals with serious or debilitating physical illness — endocrine, cardiovascular, haematological or neurological — and those with intellectual disability were excluded, so that psychotic phenomena arising directly from such conditions or from global intellectual impairment would not be misclassified. The sample size was determined at a 5% level of significance with a 10% relative error of the expected prevalence; a total of 958 eligible individuals were enrolled and assessed.

Assessment proceeded in stages. Sociodemographic information — age, sex, education, occupation, socioeconomic class, marital status, religion, living arrangements and type of housing — was recorded on a semi-structured proforma designed for the study.

All participants were then screened using the Mini International Neuropsychiatric Interview, a brief structured diagnostic interview with dichotomous yes/no probes suited to community application (8), together with the Psychosis Screening Questionnaire developed by Bebbington and Nayani, an instrument designed specifically for the detection of psychotic phenomena in general population surveys and used in successive national psychiatric morbidity surveys (9).

Participants screening positive on either instrument underwent a full diagnostic evaluation with the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID), administered by a qualified psychiatrist, and final diagnoses were assigned according to DSM-IV criteria (10). This staged design — brief screening of the whole population followed by structured diagnostic interview of screen-positives — is the standard approach in

community psychiatric epidemiology and preserves feasibility without sacrificing diagnostic rigour. Diagnoses were grouped as schizophrenia, brief psychotic disorder, delusional disorder, substance-induced psychotic disorder and psychotic disorder due to a general medical condition.

Data were entered into a Microsoft Excel spreadsheet and analysed using the Statistical Package for the Social Sciences version 21.0. Categorical variables were expressed as numbers and percentages and continuous variables as mean $\pm$ standard deviation. Point prevalence was calculated as the number of individuals meeting

diagnostic criteria divided by the number of individuals surveyed. Age- and sex-specific prevalence rates were computed using the corresponding stratum denominators. Categorical comparisons were made using the Chi-square test, with the Fisher exact test substituted where expected cell frequencies were small, and quantitative variables were compared using the unpaired t test or the Mann-Whitney test where distributions were not normal. A p value below 0.05 was considered statistically significant.

Results: A total of 958 individuals were surveyed and assessed.

Table 1: Age and sex distribution of the surveyed population (n = 958)

Variable	Category	n	%
Age (years)	<20	27	2.82
	20–30	279	29.12
	30–40	192	20.04
	40–50	236	24.63
	50–60	168	17.54
	60–65	56	5.85
Sex	Male	570	59.50
	Female	388	40.50
	Total	958	100.00

The largest age stratum was 20–30 years (29.12%), followed by 40–50 years (24.63%) and 30–40 years (20.04%); the smallest was the below-20 group (2.82%), reflecting the lower age limit of 18 years. Men constituted 59.50% and women 40.50% of the surveyed population (Table 1).

Table 2: Socioeconomic and employment profile of the surveyed population (n = 958)

Variable	Category	n	%
Socioeconomic class	Upper	112	11.69
	Upper middle	234	24.43
	Lower middle	193	20.15
	Upper lower	178	18.58
	Lower	241	25.16
Employment status	Professional	12	1.25
	Skilled	86	8.98
	Semi-skilled	259	27.04
	Unskilled	348	36.33
	Unemployed	253	26.41

The lower socioeconomic class was the largest single stratum (25.16%), closely followed by the upper middle class (24.43%); the upper class was smallest at 11.69%. Occupationally, the community was dominated by manual labour, with unskilled workers accounting for 36.33% and semi-skilled workers for 27.04%. A further 26.41% were unemployed, while professionals constituted only 1.25% (Table 2).

Table 3: Point prevalence of psychotic disorders (n = 958)

Category	n	Prevalence (%)
Individuals with a psychotic disorder	7	0.73
Individuals without a psychotic disorder	951	99.27
Total surveyed	958	100.00

Seven individuals in the surveyed population of 958 met diagnostic criteria for a psychotic disorder, giving a point prevalence of 0.73%, or approximately 7 per 1000 population (Table 3). The mean age of those with a psychotic disorder was 28.4 years, compared with 39.3 years for the surveyed population as a whole, and the age range of cases was 19 to 44 years.

Table 4: Diagnostic distribution of psychotic disorders (n = 7)

Diagnosis (DSM-IV)	n	%
Schizophrenia	2	28.57
Delusional disorder	2	28.57
Brief psychotic disorder	1	14.29
Substance-induced psychotic disorder	1	14.29
Psychotic disorder due to a general medical condition	1	14.29
Total	7	100.00

Schizophrenia and delusional disorder were the commonest diagnoses, with 2 cases each (28.57% each). One case each was diagnosed as brief psychotic disorder, substance-induced psychotic disorder and psychotic disorder due to a general medical condition (14.29% each). Non-schizophrenic psychoses thus accounted for 5 of the 7 cases, corresponding to a schizophrenia-specific prevalence of 0.21% (2 of 958) (Table 4).

Table 5: Age-specific prevalence of psychotic disorders

Age group (years)	Surveyed (n)	Cases (n)	Prevalence (%)
<20	27	1	3.70
20–30	279	3	1.08
30–40	192	2	1.04
40–50	236	1	0.42
50–60	168	0	0.00
60–65	56	0	0.00
Total	958	7	0.73

Chi-square = 5.78; p = 0.327.

Prevalence fell progressively across successive age bands, from 3.70% in those below 20 years to 1.08% at 20–30 years, 1.04% at 30–40 years and 0.42% at 40–50 years, with no cases identified beyond the age of 50 years. All seven cases

therefore occurred below 50 years, and six of the seven below 40 years. Despite this consistent gradient, the difference in prevalence across age groups did not reach statistical significance (Chi-square = 5.78, p = 0.327) (Table 5).

Table 6: Sex-specific prevalence of psychotic disorders

Sex	Surveyed (n)	Cases (n)	Prevalence (%)
Male	570	4	0.70
Female	388	3	0.77
Overall	958	7	0.73

Chi-square = 0.016; p = 0.89.

Prevalence was almost identical in the two sexes, at 0.70% among men and 0.77% among women, with no statistically significant difference (Chi-square = 0.016, p = 0.89) (Table 6).

Discussion

The point prevalence of psychotic disorders in this rural community was 0.73%, or roughly 7 per 1000 adults. This figure exceeds most Indian and global estimates for schizophrenia considered alone: the Global Burden of Disease Study 2016 placed the global age-standardized point prevalence of schizophrenia at 0.28% [5], the National Mental Health Survey of India 2015–16 estimated schizophrenia and other non-affective psychoses at approximately 0.3% [7], and Loganathan and Murthy reported about 3 per 1000 (6). The apparent discrepancy is largely explained by case definition. Our figure encompasses the whole psychotic spectrum, including delusional disorder, brief psychotic disorder, substance-induced psychosis and psychosis due to a medical condition; when schizophrenia alone is considered, the prevalence

in our sample was 0.21% (2 of 958), which sits comfortably within the range reported by Saha and colleagues in their systematic review [11] and is consistent with the national estimates. A second contributor is method: door-to-door enumeration with a screening instrument designed for community use detects cases that never reach services, and under-reporting has long been recognized as the central challenge of Indian psychiatric epidemiology, with one southern Indian community survey finding that a third of people with schizophrenia had never contacted any formal health system [6]. The diagnostic distribution is itself informative. Only 2 of 7 cases were schizophrenia, while delusional disorder accounted for an equal number and the remaining three cases were brief, substance-induced or organic psychoses. Programmes that equate community psychosis with schizophrenia will therefore miss the majority of affected individuals, several of whom — particularly those with substance-induced and organic psychoses — have potentially reversible illness if identified early.

Cases were concentrated in the younger age strata, with a mean age of 28.4 years against 39.3 years for the population surveyed, an age range of 19 to 44 years, and no case beyond 50 years. This accords with the established observation that psychotic disorders rarely begin before 14 years, rise sharply from mid-adolescence and peak between the second and fourth decades [12]. Sommer and colleagues, in a nationwide cohort, described a peak incidence around age 22 in men with a right-skewed distribution, and a flatter distribution in women extending from 18 to 65 years with somewhat higher rates between 18 and 35 [13]. The absence of cases above 50 years in our sample is consistent with this pattern but must be interpreted with caution given the small number of cases and the upper age limit of 65 years, which excluded late-onset presentations.

Prevalence was essentially equal in men (0.70%) and women (0.77%). International evidence on sex differences is mixed: Saha and colleagues found evidence of increased risk in males [11] and Orrico-Sánchez and colleagues reported schizophrenia to be 76% more prevalent in men in a Spanish real-world dataset [14], whereas most studies agree that incidence is broadly similar while onset occurs three to five years later in women, who predominate among cases with onset after 40–50 years [12].

These differences are usually attributed to the interplay of hormonal and psychosocial factors, oestrogen being hypothesized to exert a protective neurodevelopmental and neurotransmitter effect. Our finding of near-parity is compatible with equal lifetime risk, though the seven cases available provide no power to detect a modest sex difference.

The principal limitations follow from this last point. With only seven cases, confidence intervals around every prevalence estimate are wide, and the Chi-square tests reported for age and sex are underpowered; a negative result here should not be read as evidence of no difference.

The survey was confined to a single taluk and to residents aged 18–65 years, so the findings cannot be generalized to childhood-onset or late-onset psychosis, and fieldwork coincided with the COVID-19 pandemic period, which may have influenced household availability and help-seeking. Nonetheless, the study demonstrates that systematic door-to-door case finding in rural Karnataka is feasible and yields a burden substantially greater than facility-based data would suggest.

Conclusion

In this door-to-door survey of 958 adults in rural Hoskote taluk, the point prevalence of psychotic disorders was 0.73%. Schizophrenia and delusional disorder each accounted for two cases, with single

cases of brief psychotic disorder, substance-induced psychotic disorder and psychotic disorder due to a general medical condition, so that non-schizophrenic psychoses formed the majority of the community burden. Cases were concentrated between the second and fourth decades of life, with a mean age of 28.4 years and no case beyond 50 years, and prevalence was almost identical in men and women. These findings indicate that the burden of psychosis in rural southern Karnataka is at least as great as in urban populations and that a substantial proportion of it lies outside the schizophrenia diagnosis on which services are usually focused. Community-level case finding, integration of psychosis detection into primary care, and outreach services capable of reaching households that never present to hospitals are required if the rural treatment gap is to be narrowed. Larger multi-taluk surveys are needed to generate more precise estimates.

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