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Environmental and Societal Determinants of Mental Health in Hyderabad, Sindh: Exploring the Urban-Rural Disparities

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Abstract

Background: Mental health disorders are a growing public health concern globally, with environmental and societal factors playing a crucial role in their distribution. Urban and rural populations experience these determinants differently, leading to disparities in prevalence, risk factors, and access to care.

Objectives: To investigate and compare the environmental and societal determinants of mental health disorders among urban and rural populations, and to explore their help-seeking behaviors and barriers to care.

Methodology: A comparative cross-sectional study was conducted among 369 adults using a multistage cluster sampling technique in both urban and rural settings from September to February 2026. Data were collected through a structured questionnaire, which included demographic, environmental, societal, and mental health variables. Standardized tools (PHQ-9 and GAD-7) were used to assess depression and anxiety. Data were analyzed using SPSS-29 to identify patterns and associations, with a significance level set at $p \leq 0.05$.

Results: Over half of the respondents (55.3%) reported worsening mental health in the past five years. The prevalence of depression was 26.6% mild, 25.2% moderate, and 10.0% severe, while anxiety prevalence was 27.6% mild, 32.0% moderate, and 21.7% severe. Urban residents showed higher mean depression and anxiety scores compared to rural residents. Environmental stressors such as constant air and noise pollution were reported by 45% of participants, while 39.3% perceived their neighborhoods as unsafe with poor infrastructure. Financial insecurity (36%) and lack of social support (24.7%) were the most common social stressors. Awareness of mental health services was low (27.6%), with cost (25.5%) and stigma (23.6%) as major barriers. Only 22% of respondents had sought professional help, reflecting a significant treatment gap.

Conclusion: Environmental and societal factors significantly shape mental health outcomes across urban and rural populations, suggesting the need for context-specific, integrated interventions to reduce disparities and improve access to care.

Introduction

Urbanization is one of the most significant social and environmental transformations of modern societies, shaping patterns of living, employment, mobility, housing, social interaction, and health. Although urban growth can create economic opportunities and improve access to services, it also exposes populations to multiple stressors that may adversely affect mental health. Overcrowding, noise pollution, environmental degradation, traffic congestion, housing pressure, social inequality, and reduced access to green spaces are increasingly recognized as factors that contribute to psychological distress among urban populations.[1] Compared with rural populations, urban residents may experience a higher burden of depression, anxiety, stress, and other common mental health problems due to the combined influence of environmental and social pressures.[2]

Mental health in urban settings cannot be understood only through individual-level factors. It is shaped by complex interactions between the built environment, social networks, economic insecurity, cultural norms, and access to care. Dense urban living may paradoxically increase social isolation, as individuals may live among large populations but lack meaningful social relationships and community support. This social disconnection can intensify loneliness, anxiety, depression, and emotional distress. [3] Urban environments may also place pressure on mental health systems, as demand for services increases while resources remain limited. Long waiting times, inadequate availability of trained professionals, and poor mental health literacy can further delay diagnosis and treatment. [4]

In Pakistan, mental health remains a major but under-prioritized public health concern. The burden is intensified by limited investment in mental health services, shortage of trained professionals, poor awareness, and persistent stigma. Cultural attitudes toward mental illness often discourage individuals from discussing symptoms openly or seeking professional support.[5] In many communities, mental illness is associated with shame, family dishonor, or social rejection, which can prevent affected individuals from accessing timely care.[6] These barriers are particularly important in Sindh, where both urban and rural populations may experience mental health challenges but through different pathways.

Urban residents in Pakistan may be more exposed to pollution, overcrowding, traffic noise, poor housing conditions, economic instability, and reduced social support. These stressors can increase vulnerability to anxiety, depression, and perceived stress.[7] At the same time, rural communities face their own distinct risks, including poverty, agricultural uncertainty, drought, water scarcity, distance from healthcare facilities, lack of mental health specialists, and limited service availability.[8] Therefore, the urban–rural divide should not be viewed simply as one population being more affected than the other; rather, both settings may experience different determinants, barriers, and patterns of mental health burden.

Access to mental health care remains a critical concern across both settings. In urban areas, services may exist but remain difficult to access because of cost, stigma, overcrowded facilities, lack of awareness, and limited availability of specialized care. In rural areas, the treatment gap may be even wider due to geographical distance, fewer trained professionals, weak referral systems, and poor awareness of available services. [9] These barriers may delay help-seeking and worsen outcomes among individuals already experiencing symptoms of depression, anxiety, or stress. Mental health stigma further compounds this problem by discouraging disclosure and reducing willingness to seek support. [10]

This study is important because mental health problems in Pakistan are rising while environmental and societal contributors remain insufficiently studied, particularly across urban and rural populations. Hyderabad is experiencing urban growth,

environmental stress, and socioeconomic pressures, while surrounding rural communities face climate-related and healthcare access challenges. Understanding these differences can support targeted public health planning, reduce stigma, and guide context-specific mental health interventions.

This study aims to investigate and compare environmental and societal determinants of mental health disorders among urban and rural populations in Hyderabad, Sindh. Specifically, it seeks to assess the burden of common mental health disorders using standardized screening tools, examine environmental and societal determinants affecting mental health outcomes, compare their differential impact across urban and rural settings, and explore help-seeking behaviors and barriers to accessing mental health services.

Methods

This comparative cross-sectional study was conducted in selected urban and rural areas of Hyderabad, Sindh. The study was completed over six months after approval of the synopsis. A total of 369 participants were included, calculated using a 32%[11] prevalence of mental health disorders, 95% confidence level, 5% margin of error, and 10% allowance for non-response.

Participants were selected through a multistage cluster sampling technique. Three urban union councils were selected by simple random sampling, and households were approached using the random-walk method. For rural areas, four villages within 50 km of Hyderabad were selected, and households were identified with support from local lady health workers. Eligible participants were adults aged 18 years or older who were permanent residents for at least one year and willing to participate.

Data were collected through face-to-face interviews using a pre-designed semi-structured questionnaire translated into local languages. Mental health status was assessed using PHQ-9 and GAD-7 tools. Data were coded in Microsoft Excel and analyzed using SPSS version 29. Descriptive statistics, and chi-square tests were applied, with $p \leq 0.05$ considered statistically significant. Ethical approval, informed consent, anonymity, and confidentiality were ensured.

Results

A total of 369 respondents participated in the study, with nearly equal representation from urban and rural areas of Hyderabad, Sindh. The demographic distribution showed that the study population was predominantly young to middle-aged, with the largest proportion belonging to the 25–34 years age group. Gender distribution was almost balanced, and educational status varied across participants, with most respondents having secondary or higher education. Socioeconomic diversity was also evident, as participants represented different occupational groups and income categories. Slightly more than half of the respondents belonged to nuclear families, while almost one-third had been living in their current area for 10–14 years. This distribution provided a suitable basis for comparing mental health outcomes across urban and rural populations.

Table 1. Demographic characteristics of respondents, n = 369

Variable	Category	Frequency	Percentage
Age group	18–24 years	92	24.9
	25–34 years	128	34.7
	35–44 years	78	21.1
	45–54 years	47	12.7
	55 years and above	24	6.5
Gender	Male	181	49.1
	Female	188	50.9

Education level	No formal schooling	48	13.0
	Primary education	71	19.2
	Secondary education	129	35.0
	Graduate and above	121	32.8
Occupation	Unemployed	56	15.2
	Informal labor	84	22.8
	Salaried employment	107	29.0
	Student	69	18.7
	Homemaker	53	14.3
Monthly household income	Below PKR 20,000	72	19.5
	PKR 20,000–39,999	118	32.0
	PKR 40,000–59,999	91	24.7
	PKR 60,000–79,999	54	14.6
	PKR 80,000 and above	34	9.2
Residence area	Urban	188	50.9
	Rural	181	49.1
Family structure	Nuclear family	204	55.3
	Joint family	165	44.7
Duration of residence	Less than 5 years	61	16.5
	5–9 years	89	24.1
	10–14 years	112	30.4
	15 years and above	107	29.0

The mental health profile of the respondents indicated a substantial psychological burden. More than half of the participants reported that their mental health had worsened during the previous five years. Depression and anxiety symptoms were common across the sample, with mild and moderate depression forming the largest PHQ-9 categories, while moderate anxiety was the most frequent GAD-7 category. Urban respondents showed a higher burden of any mental health disorder than rural respondents, suggesting that urban environmental and social stressors may have contributed to poorer mental health outcomes.

Environmental and social determinants were also prominent. Nearly half of the respondents reported constant exposure to air and noise pollution, and a considerable proportion rarely or never visited green spaces. Unsafe neighbourhood conditions, poor infrastructure, financial insecurity, and lack of social support were also commonly reported. Awareness and use of mental health services remained limited, as more than one-third of respondents were not aware of available services, and the leading barriers to care were treatment cost, stigma or shame, and lack of nearby services.

Table 2. Mental health outcomes and environmental/social determinants, n = 369

Variable	Category	Frequency	Percentage
Self-reported change in mental health over past 5 years	Worsened	204	55.3
	Remained the same	129	35.0
	Improved	36	9.8
Depression severity, PHQ-9	Minimal	77	20.9
	Mild	98	26.6
	Moderate	93	25.2
	Moderately severe	64	17.4
	Severe	37	10.0
Anxiety severity, GAD-7	Minimal	69	18.7
	Mild	102	27.6
	Moderate	118	32.0

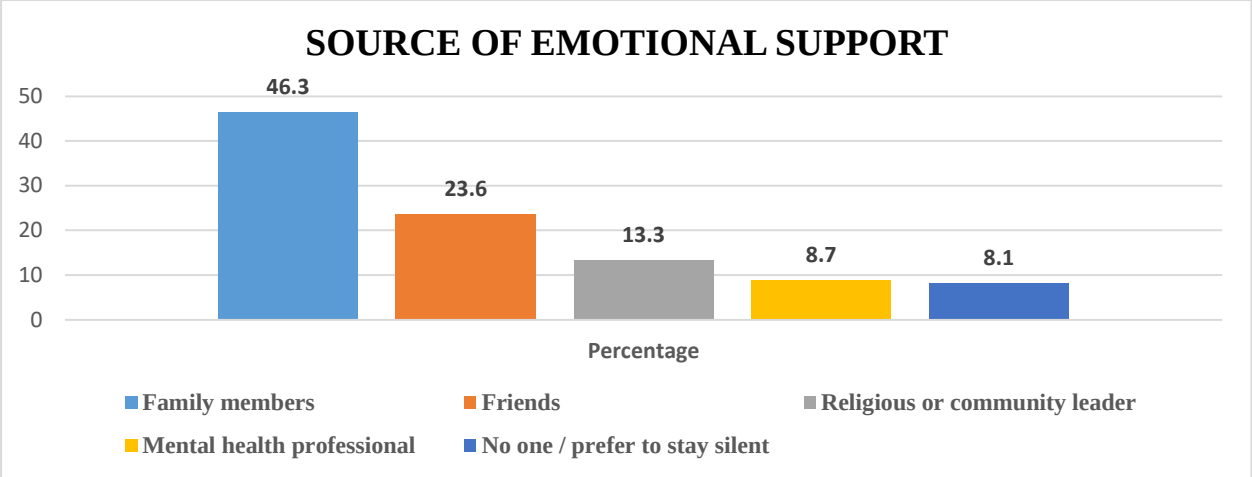
	Severe	80	21.7
Any mental health disorder by residence	Urban: Yes	122	64.9
	Urban: No	66	35.1
	Rural: Yes	97	53.6
	Rural: No	84	46.4
Exposure to air and noise pollution	Never/Rarely	64	17.4
	Often	139	37.7
	Constantly	166	45.0
Visiting green spaces	Daily	54	14.6
	Weekly	86	23.3
	Rarely	142	38.5
	Never	87	23.6
Neighbourhood safety/infrastructure	Very safe/well maintained	52	14.1
	Moderately safe/few issues	113	30.6
	Unsafe/frequent infrastructure issues	145	39.3
	Very unsafe/poor sanitation and lighting	59	16.0
Major social stressor	Financial insecurity	133	36.0
	Lack of social support	91	24.7
	Work-life imbalance	64	17.4
	Poor sleep quality	51	13.8
	Safety and neighbourhood issues	30	8.1
Awareness/availability of mental health services	Aware and knew where to seek help	102	27.6
	Heard about services but unsure of access	128	34.7
	Not aware of available services	139	37.7
Reported barriers to seeking care	Cost of treatment	94	25.5
	Stigma or shame	87	23.6
	Lack of nearby services	83	22.5
	Family disapproval	61	16.5
	Belief that it would not help	44	11.9

A chi-square test was performed to assess the association between residence type and the presence of any mental health disorder. Mental health disorders were more common among urban respondents than rural respondents. The association was statistically significant, indicating that residence type was associated with mental health disorder status among the study participants.

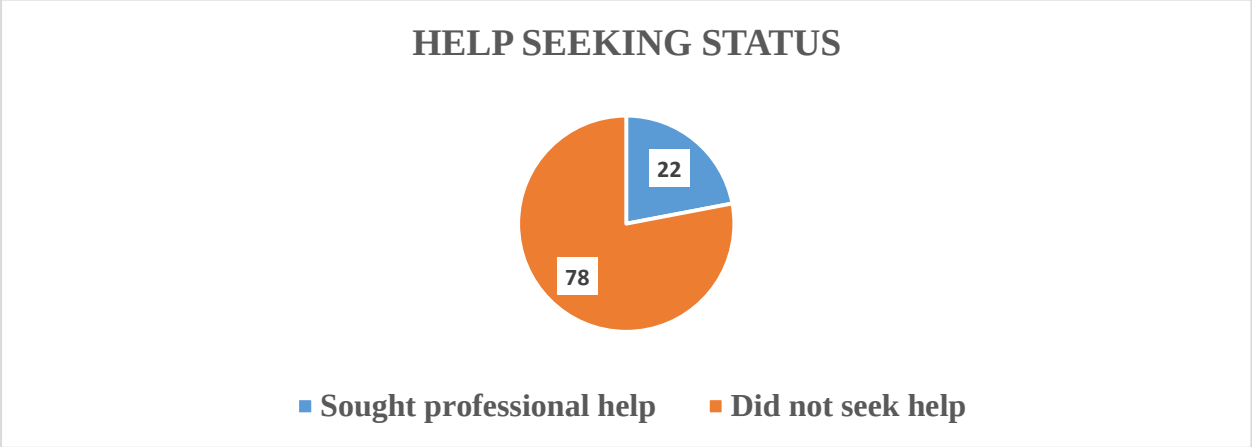
Table 3. Association between residence type and any mental health disorder

Residence type	**Mental health disorder: Yes**	**Mental health disorder: No**	**Total**	**χ^2**	**df**	**p-value**
Urban	122	66	188	4.88	1	0.027
Rural	97	84	181			
Total	**219**	**150**	**369**			

The pattern of emotional support showed that respondents relied mainly on informal support systems. As shown in Figure 1, family members were the most frequently reported source of emotional support, followed by friends and religious or community leaders. Only a small proportion reported seeking emotional support from mental health professionals, suggesting that formal psychological support remained underused in this population.



The help-seeking pattern further confirmed the treatment gap. As shown in Figure 2, only 22.0% of respondents had sought professional mental health support, while 78.0% had not.



Discussion

The findings showed clear urban–rural disparities in the prevalence and determinants of mental health disorders. Urban respondents experienced a higher burden of depression and anxiety than rural respondents, with 64.9% of urban participants reporting any mental health disorder compared with 53.6% of rural participants. This difference did not necessarily mean that rural communities had a low mental health burden; rather, it reflected differences in exposure, recognition, reporting, and access to care. Urban participants were more exposed to overcrowding, pollution, unstable housing, and social isolation, while rural participants faced under-detection due to stigma, limited awareness, and weak mental health infrastructure. These findings were consistent with previous research showing that urban environments expose individuals to multiple psychological stressors and that urban residents may face a 20–40% higher risk of depression and anxiety than rural populations.[12]

Environmental determinants played a major role in shaping mental health outcomes in both settings. In this study, 45.0% of respondents reported constant exposure to air and noise pollution, while 38.5% rarely visited green spaces and 23.6% never accessed them. Urban respondents frequently reported chronic exposure to noise, air pollution, overcrowding, and poor housing, all of which were linked with higher

depression and anxiety scores. These findings aligned with evidence that persistent exposure to traffic emissions, industrial pollutants, and dense living conditions contributes to psychological strain, cognitive fatigue, sleep disruption, and emotional distress. Limited access to clean, green, and safe spaces further reduced opportunities for stress recovery and social interaction.[13, 14] Rural respondents experienced different but equally important environmental stressors, including water scarcity, agricultural distress, climate variability, prolonged droughts, unpredictable weather, and crop-related economic instability, which reinforced anxiety, depression, and hopelessness.[15, 16]

Societal determinants also strongly shaped mental health outcomes. Financial insecurity was the most common social stressor, reported by 36.0% of respondents, followed by lack of social support (24.7%) and work-life imbalance (17.4%). These findings supported existing literature showing that socioeconomic disadvantage, unemployment, gender inequality, and limited education increase psychological vulnerability.[17, 18] Gender dynamics were also important, as women in both urban and rural settings experienced restricted autonomy, domestic burdens, cultural expectations, harassment, and limited decision-making power, increasing their vulnerability to depression and anxiety.[19, 20]

Help-seeking remained poor, as only 22.0% of respondents had sought professional mental health support, while 78.0% had not. The main barriers were cost of treatment (25.5%), stigma or shame (23.6%), lack of nearby services (22.5%), and family disapproval (16.5%). These findings were consistent with research from low- and middle-income settings, where stigma, poor availability of affordable services, and cultural beliefs often delay or prevent treatment.[21, 22] Coping was also mostly informal, with respondents relying on friends, family, prayer, or meditation, while few used formal therapy. Although informal coping may offer emotional relief, it may not adequately manage moderate to severe psychological disorders.[23, 24] Overall, the findings supported the need to integrate environmental and social determinants into mental health planning rather than focusing only on clinical care.[25, 26]

The findings suggested that urban strategies should improve environmental conditions, increase access to green spaces, and integrate mental health into primary care. Rural interventions should focus on service availability, community-based approaches, stigma reduction, and culturally appropriate outreach. However, the study had limitations. Its cross-sectional design restricted causal interpretation, and reliance on self-reported data may have introduced reporting bias. The focus on one district also limited generalizability to other regions with different social and infrastructural contexts. Despite these limitations, the findings provided useful evidence for targeted mental health interventions in resource-limited settings.

Conclusion

This study shows that environmental and societal factors strongly shape mental health in both urban and rural settings. Urban residents face stress from pollution, overcrowding, and isolation, while rural communities experience poverty, agricultural distress, and poor service access. Stigma and low awareness widen the treatment gap.

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