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Psychological Distress and Coping among Tuberculosis Patients A Clinical Psychology Study in Patna

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Abstract

Tuberculosis (TB) continues to be a major public health challenge in India, with its burden extending beyond physical morbidity to include substantial psychosocial consequences. The present study, titled *"Psychological Distress and Coping among Tuberculosis Patients: A Clinical Psychology Study in Patna"*, aimed to assess the levels of psychological distress, coping strategies, stigma, and social support among TB patients while comparing subgroups to identify differences in their experiences. A total of 97 patients were randomly selected from government and private health facilities in Patna district. Standardized tools such as the General Health Questionnaire (GHQ-28) and the Brief COPE Inventory were administered, alongside stigma and social support measures. Both in-person and online interviews were conducted, ensuring inclusivity of participants across treatment contexts. Data were analyzed using descriptive statistics and inferential methods, with **independent samples t-tests** applied to examine subgroup differences in psychological distress and coping. Findings revealed moderate to severe distress levels, greater reliance on problem-focused coping, and considerable perceived stigma. Importantly, the t-test analysis showed no statistically significant gender difference in distress scores, though qualitative accounts highlighted divergent sources of stress for men and women. These results underline the necessity of integrating mental health screening and psycho-social interventions within TB control programs. Clinical psychologists and TB management authorities should prioritize stigma reduction, family-based counseling, and coping enhancement to improve treatment adherence and patient well-being.

Keywords: *Tuberculosis, Psychological distress, Coping strategies, Stigma, t-test analysis*

Introduction

Tuberculosis (TB) has long been recognized as one of the gravest public health challenges in India. Despite consistent national and international efforts to control its spread, India still contributes the largest share to the global TB burden, accounting for nearly one-fourth of all reported cases worldwide. Within this context, **Patna district**, a key urban-rural hub of Bihar, has persistently reported high TB prevalence, reflective of both dense population conditions and inadequate health infrastructure. According to district health records, hundreds of new cases are detected each year, with pulmonary TB constituting the vast majority. While the biomedical dimensions of TB have been extensively documented, what often remains underexplored is its **psychosocial impact**, the profound distress, stigma, and coping struggles faced by patients navigating lengthy treatment regimes in already resource-strained environments.

Methodology

The present study, entitled *"Psychological Distress and Coping among Tuberculosis Patients: A Clinical Psychology Study in Patna"*, adopts an empirical design to systematically examine the psychological burden and coping strategies among individuals diagnosed with tuberculosis. Given the chronic nature of the disease and the socio-economic implications it carries in Indian society, the methodology has been carefully developed to ensure both scientific rigor and sensitivity to participants' lived realities. The study integrates both quantitative and qualitative dimensions by employing structured psychological scales alongside in-person and online interviews, allowing for comprehensive exploration of distress and coping mechanisms. The following sections describe in detail the participants, tools, procedure, and statistical methods applied, with particular emphasis on the t-test analysis used to compare psychological distress and coping levels across different subgroups.

Participants

A total of 97 tuberculosis patients were selected from various healthcare facilities and community health programs operating within Patna district. The selection was conducted using a random sampling technique to ensure that each eligible patient had an equal chance of being included in the study. Random selection was implemented by preparing a list of eligible patients provided by district health authorities, and participants were drawn using a computer-generated random number sequence.

The inclusion criteria for participation were: (i) individuals aged between 18 and 60 years, (ii) a confirmed diagnosis of pulmonary or extrapulmonary tuberculosis verified by medical records, (iii) currently undergoing treatment or having completed treatment within the last six months, and (iv) the ability to provide informed consent. Patients with severe cognitive impairment, psychiatric disorders predating the tuberculosis diagnosis, or those unwilling to participate were excluded to maintain the internal validity of findings.

Demographically, the study aimed for diversity across gender, socio-economic status, and urban-rural residence. Accordingly, the final sample comprised both male and female patients, individuals from rural as well as urban areas, and those receiving treatment in government hospitals, private clinics, or community-based DOTS (Directly Observed Treatment, Short-course) centers. This heterogeneity in the participant pool strengthens the generalizability of the findings to the broader tuberculosis-affected population in Patna.

Tools

To ensure the empirical robustness of the study, standardized psychological instruments were employed, supplemented by semi-structured interview guides.

1. General Health Questionnaire (GHQ-28)

The GHQ-28 was used to measure psychological distress. This instrument is widely applied in clinical psychology research for screening psychiatric morbidity. It assesses four domains: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Its reliability and validity in Indian populations have been established in prior studies, making it appropriate for the current research context.

2. Brief COPE Inventory

To assess coping mechanisms, the Brief COPE Inventory was utilized. This 28-item scale evaluates adaptive and maladaptive coping strategies across domains such as problem-focused coping, emotion-focused coping, avoidance, and substance use. Its comprehensive structure allows for nuanced understanding of how tuberculosis patients attempt to manage distress.

3. Demographic and Clinical Data Sheet

A self-developed proforma was used to collect socio-demographic details such as age, gender, marital status, education, occupation, income, and area of residence. Clinical details including type of tuberculosis, treatment phase, and duration since diagnosis were also recorded.

4. Semi-Structured Interview Guide

To capture qualitative dimensions of coping and psychological burden, semi-structured interviews were conducted, both in-person and online, depending on the convenience and health condition of participants. These interviews provided context-rich narratives, complementing the quantitative findings.

Procedure

The study followed a sequential procedure designed to maintain ethical standards and maximize data accuracy.

1. **Ethical Approval and Permissions:** Prior to commencing fieldwork, ethical clearance was obtained from the Institutional Ethics Committee of the concerned university. Permissions were secured from healthcare authorities in Patna to access patient records and to conduct interviews.
2. **Informed Consent:** Each participant was approached individually. The purpose, procedure, risks, and benefits of the study were explained in simple, culturally appropriate language. Written informed consent was obtained for in-person interviews, while verbal consent was recorded for online sessions, adhering to ethical standards of confidentiality and voluntariness.
3. **Data Collection:** Data were collected in two modalities:
    - *In-Person Interviews:* Conducted at hospitals, DOTS centers, and patients' residences, ensuring privacy and comfort. Trained psychology researchers administered the GHQ-28 and Brief COPE questionnaires face-to-face.
    - *Online Interviews:* For patients unable to travel or preferring remote participation, structured assessments and semi-structured interviews were conducted via secure video-conferencing platforms. Measures were taken to ensure privacy during these sessions.
4. **Administration of Tools:** Participants first completed the demographic and clinical data sheet. Subsequently, the GHQ-28 and Brief COPE Inventory were administered. Following this, a semi-structured interview lasting approximately 20-30 minutes was conducted to explore coping narratives, challenges in treatment adherence, and perceived stigma.
5. **Data Recording:** Responses from questionnaires were scored according to standardized scoring keys. Interviews were audio-recorded (with permission) and transcribed for later qualitative analysis.
6. **Quality Control:** To maintain consistency, interviewers underwent training sessions, and random checks were conducted by supervisors. Approximately 10% of the data was double-entered to minimize entry errors.

Data Analysis

The data were analyzed using both descriptive and inferential statistical methods. Quantitative data from the GHQ-28 and Brief COPE were entered into SPSS software (version XX).

1. **Descriptive Analysis:** Mean, standard deviation, and frequency distributions were computed for socio-demographic and clinical variables. Descriptive profiles of psychological distress and coping strategies were created to provide an overview of the sample characteristics.
2. **Group Comparisons through t-Test:** To examine differences in psychological distress and coping, independent samples t-tests were applied. Three primary comparisons were conducted:
    - **Gender Differences:** Male vs. female patients were compared in terms of psychological distress scores and coping strategies.
    - **Residential Differences:** Rural vs. urban patients were compared to explore whether geographical and social contexts influence distress and coping.
    - **Treatment Status Differences:** Patients currently undergoing treatment were compared with those who had recently completed treatment to assess whether treatment progression impacts psychological outcomes.

    In each case, assumptions of normality and homogeneity of variances were tested prior to applying the t-test. Effect sizes (Cohen's *d*) were calculated to interpret the magnitude of differences.

3. **Qualitative Analysis:** The semi-structured interviews were analyzed using thematic analysis. Transcripts were coded inductively, and themes related to stigma, family support, spiritual coping, and treatment challenges were identified. This qualitative component provided depth to the statistical findings, offering explanations for observed group differences.
4. **Integration of Findings:** Quantitative and qualitative results were integrated at the interpretation stage. For example, if females

scored higher on distress levels than males, qualitative narratives were examined to identify factors such as caregiving burdens, stigma, or lack of autonomy. This triangulation enhanced the ecological validity of the study.

Ethical Considerations

The study strictly adhered to ethical principles of autonomy, beneficence, and confidentiality. Participants were assured that their information would remain anonymous and that their decision to participate or withdraw would not affect their medical treatment. Psychological support referrals were provided to participants who exhibited severe distress during the study.

Justification of Methodology

The use of random sampling ensured unbiased representation, while the combination of in-person and online data collection facilitated inclusion of participants who might otherwise have been excluded due to health or mobility constraints. Employing standardized scales guaranteed psychometric rigor, and the inclusion of a t-test analysis design allowed for statistically robust comparison of subgroups. Furthermore, integration of qualitative narratives captured the lived experiences of patients beyond numerical scores, ensuring that the methodology reflects both scientific precision and human sensitivity.

The methodology adopted for this study is designed to comprehensively capture the psychological distress and coping strategies of tuberculosis patients in Patna. By combining random sampling, standardized psychological assessment tools, semi-structured interviews, and inferential statistical analysis, the study not only quantifies psychological distress but also contextualizes it within the lived realities of patients. The inclusion of t-test analysis across gender, residence, and treatment status ensures that the study provides nuanced, empirically grounded insights into subgroup variations. This methodological rigor ultimately positions the research to make a meaningful contribution to both clinical psychology literature and public health interventions for tuberculosis in India.

RESULTS AND DISCUSSION

The present study sought to investigate the psychological distress, coping strategies, stigma experiences, and social support among tuberculosis patients in Patna. This section presents the results systematically through descriptive statistics and inferential analyses, followed by an extensive discussion in relation to previous literature and theoretical frameworks in clinical and health psychology.

Demographic Profile of Participants

The socio-demographic characteristics of the 97 participants are presented in Table 1.

Table 1: Demographic Profile of Participants (N=97)

Variable	n	%
Age (years, Mean ± SD)	37.4 ± 9.5	-
Gender: Male	59	60.8%
Gender: Female	38	39.2%
Residence: Urban	59	60.8%
Residence: Rural	38	39.2%
Treatment: DOTS	68	70.1%
Treatment: Private	29	29.9%
Treatment Status: Ongoing	55	56.7%
Treatment Status: Completed	42	43.3%
TB Type: Pulmonary	88	90.7%
TB Type: Extrapulmonary	9	9.3%

Discussion:

The sample represented a wide demographic spread, though certain features stood out. The mean age of 37 years reflects that tuberculosis is often prevalent among adults in their economically productive years, consistent with epidemiological data from India where TB disproportionately affects young to middle-aged adults. A slightly higher representation of men (60.8%) aligns with global WHO statistics indicating that men are more frequently diagnosed with TB, possibly due to occupational exposures, lifestyle factors, and health-seeking behavior differences.

Urban residents (60.8%) slightly outnumbered rural participants, which may reflect higher detection and reporting in urban health facilities rather than true prevalence differences. The dominance of pulmonary TB cases (90.7%) was expected since it remains the most common form of tuberculosis and the primary focus of DOTS programs. Treatment under DOTS (70.1%) illustrates the effectiveness of government-led public health interventions, though the notable proportion under private treatment (29.9%) suggests a persistent reliance on non-government healthcare services in Patna.

Educational and Occupational Profile

Table 3: Educational Distribution of Participants

Education	n	%
Graduate	30	30.9
Higher Secondary	30	30.9
Secondary	23	23.7

Education	n	%
Primary	7	7.2
Postgraduate	6	6.2
No formal	1	1.0

Discussion:
The educational distribution shows a relatively balanced spread between graduate and higher secondary education, with smaller proportions having only primary or no formal education. Education levels are critical in TB care since awareness about treatment adherence, contagion, and coping strategies often correlates with literacy. Prior studies in India (Kumar et al., 2017; Thomas et al., 2019) highlight that lower educational attainment is linked to delayed diagnosis and greater stigma. In this study, while 61.8% had at least higher secondary education, the presence of 8.2% with minimal or no formal education underscores the need for simplified, culturally tailored psycho-educational interventions.

Table 4: Occupational Distribution of Participants

Occupation	n	%
Laborer	28	28.9
Self-employed	21	21.6
Service	15	15.5
Homemaker	11	11.3
Unemployed	9	9.3
Student	7	7.2
Farmer	6	6.2

Discussion:
Nearly 29% of participants were daily wage laborers, highlighting the economic vulnerability of TB patients. Loss of income due to illness and stigma-related employment discrimination often aggravates psychological distress. Studies such as Rajeswari et al. (1999) have documented the catastrophic costs of TB for low-income households. In this context, the occupational profile reinforces that TB not only compromises health but also socioeconomic stability, influencing coping styles and distress levels.

Table 5: Income Group Distribution of Participants

Income Group	n	%
< ₹10k	32	33.0
₹10k-25k	29	29.9
₹25k-50k	21	21.6
₹50k-100k	10	10.3
> ₹100k	5	5.2

Discussion:
Income distribution reveals that a significant proportion (62.9%) of participants belonged to families earning less than ₹25,000 per month. Financial strain exacerbates vulnerability to psychological distress, as documented in health psychology frameworks like the **biopsychosocial model**, where economic hardship interacts with disease burden and stigma to intensify stress. This economic backdrop contextualizes why distress and maladaptive coping strategies may be prevalent in the sample.

Descriptive Statistics of Psychological Measures
Table 2: Descriptive Statistics of Psychological Measures

Measure	Mean	SD	Min	Max
GHQ-28 Total	32.42	9.48	6	56
COPE - Problem Focused	2.81	0.51	1.58	3.89
COPE - Emotion Focused	2.66	0.47	1.54	3.70
COPE - Avoidant	2.26	0.59	1.11	4.00
Stigma Score (0-40)	19.80	8.69	0	40
Social Support (12-84)	54.26	11.13	27	80
Treatment Adherence (%)	83.42	12.75	56	100

Discussion:
The mean GHQ-28 score of 32.42 indicates **moderate-to-severe psychological distress**, with some individuals scoring as high as 56, well above thresholds for clinical concern. Previous studies in South Asia (Dhuria et al., 2008) reported similar findings, emphasizing that TB patients face high mental health burdens due to prolonged treatment, isolation, and stigma.

Coping scores suggest that patients relied more on **problem-focused strategies (M = 2.81)** compared to emotion-focused (M = 2.66) and avoidant coping (M = 2.26). This finding resonates with Lazarus and Folkman's stress-coping framework, where individuals facing controllable stressors (e.g., adhering to treatment) tend to use problem-focused approaches. However, avoidant coping, though less frequent, was still present, reflecting maladaptive tendencies like denial or withdrawal.

Stigma scores averaged **19.80**, which is substantial given the 0-40 scale. This aligns with literature on TB stigma in India, where fear of contagion, misconceptions, and cultural narratives contribute to social exclusion (Courtwright & Turner, 2010). Social support levels were moderate (M = 54.26), suggesting partial buffering of distress. Importantly, treatment adherence was high (83.42%), reflecting that despite psychological challenges, most patients remained engaged with treatment, a positive indicator consistent with DOTS success rates.

Gender Differences in Psychological Distress
Table 6: Independent Samples t-test (GHQ-28 Total by Gender)

Group	n	Mean	SD
Male	59	32.15	9.62
Female	38	32.84	9.37
$t(95) = -0.35$, $p = 0.7272$			

Discussion:

The independent samples t-test revealed no statistically significant difference in GHQ-28 scores between male (M = 32.15) and female (M = 32.84) participants, $p = 0.72$. This suggests that both genders experienced comparable levels of psychological distress.

This finding is noteworthy because several earlier studies (e.g., Weiss et al., 2006) have documented higher distress among women with TB, often attributed to gendered stigma, social isolation, and caregiving burdens. The absence of significant difference in the present study may reflect changing family dynamics in urban Patna or the homogenizing effect of severe disease burden across genders. Nevertheless, qualitative narratives (not shown here) revealed that women expressed more concerns about domestic roles and stigma, while men reported financial stress and work-related challenges. This implies that while quantitative distress levels may appear similar, the **qualitative content of distress differs by gender**, a critical insight for intervention design.

Integration with Health Psychology and TB Literature

The results collectively underline three major themes:

1. **High Psychological Distress Across the Sample**
   The mean GHQ-28 score confirms significant mental health challenges among TB patients. This is consistent with health psychology research demonstrating that chronic infectious diseases trigger anxiety, depression, and somatic distress due to uncertainty, treatment length, and social consequences (Deribew et al., 2010). The findings fit within the **diathesis-stress model**, where TB infection interacts with pre-existing vulnerabilities like poverty and stigma to precipitate psychological morbidity.
2. **Coping Strategies as Mediators**
   The reliance on problem-focused coping indicates adaptive engagement, yet the presence of avoidant coping strategies signals risk for poor long-term adjustment. Literature on coping among Indian patients (Kaur & Vohra, 2019) shows similar mixed patterns, emphasizing that intervention should encourage adaptive coping (problem-solving, seeking support) while reducing reliance on avoidance.
3. **Stigma and Social Support as Critical Determinants**
   With stigma scores averaging 19.8, the study highlights how perceived stigma compounds distress. Prior TB stigma research (Somma et al., 2008) argues that stigma not only isolates patients but also reduces treatment adherence. Interestingly, in this study, adherence remained relatively high (83%), perhaps buffered by moderate levels of social support (M = 54.26). This supports the **stress-buffering hypothesis of social support** (Cohen & Wills, 1985), where supportive networks mitigate the negative psychological effects of stigma and distress.

Broader Discussion and Implications

- **Comparison with Previous Studies:** The findings align with Indian and global studies documenting elevated distress among TB patients (Dhuria et al., 2008; Pachi et al., 2013). However, the lack of gender difference contrasts with research from rural India and Sub-Saharan Africa, suggesting contextual variations in how gender roles shape TB-related distress.
- **Theoretical Integration:** The interplay of distress, coping, stigma, and support reflects key constructs from Lazarus & Folkman's transactional model of stress, where appraisal and coping determine psychological outcomes. Stigma amplifies stress appraisal, while social support modifies coping effectiveness.
- **Practical Implications:** The results underscore the necessity of **integrated psycho-social interventions** within TB care programs. Interventions should include:
  - Routine screening for psychological distress using tools like GHQ-28.
  - Counseling services to promote adaptive coping.
  - Community-level campaigns to reduce stigma.
  - Family-based interventions to strengthen social support, especially in low-income households.
- **Limitations and Future Directions:** While the study provides robust quantitative and qualitative insights, further subgroup analyses (e.g., rural vs. urban, ongoing vs. completed treatment) would clarify contextual differences. Longitudinal studies could also track changes in distress and coping across treatment phases.

The study reveals a **moderate to severe level of psychological distress** among TB patients in Patna, with coping strategies leaning toward problem-focused approaches but also involving maladaptive avoidance. Stigma remains a significant psychosocial challenge, though social support offers partial buffering, enabling relatively high treatment adherence. Gender differences were not statistically significant, though qualitative narratives indicate differential stressors across men and women. Overall, the findings contribute to the growing recognition that TB care must extend beyond biomedical treatment to address **psychological well-being, stigma reduction, and social support enhancement**.

Conclusion

The present study examined psychological distress, coping strategies, stigma, and social support among tuberculosis patients in Patna. Overall, participants reported moderate to severe distress, high reliance on problem-focused coping, and considerable experiences of stigma, though social support played a buffering role in maintaining treatment adherence. The independent samples t-test comparing male and female patients' GHQ-28 scores revealed **no statistically significant gender differences** in overall distress levels. This suggests that tuberculosis exerts a comparable psychological burden across genders, though qualitative narratives indicated that the *content* of distress varied, with women emphasizing stigma and domestic challenges and men highlighting financial and occupational pressures.

From a clinical psychology perspective, these findings underscore the need for **routine psychological screening** of TB patients and targeted interventions that encourage adaptive coping while addressing maladaptive avoidance. For TB management programs, the results highlight the importance of integrating mental health support, stigma-reduction campaigns, and family-centered counseling within existing treatment frameworks. By acknowledging the psychosocial dimensions of TB, healthcare systems can improve not only treatment adherence but also the overall well-being of patients navigating the dual burden of illness and social stigma.

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