

Beyond the Treatment Gap: Comparative Clinical Efficacy, Structural Barriers, and Multivariable Predictors of Anxiety Recovery in Rural India

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ABSTRACT

India faces a mental health treatment gap exceeding 80%, with rural agrarian districts bearing a disproportionate burden of unaddressed psychiatric morbidity. While clinical trials demonstrate the efficacy of pharmacotherapy and cognitive behavioral therapy (CBT) in urban centers, real-world comparative effectiveness, structural barriers to care continuation, and multivariable determinants of clinical recovery in resource-constrained rural communities remain poorly characterized. This study evaluated treatment pathways, comparative clinical outcomes, and predictors of recovery among adult anxiety sufferers in Mahoba district, Uttar Pradesh. Employing an explanatory sequential mixed-methods design (QUAN → qual), a quantitative cohort of $N = 412$ adults was assessed using the GAD-7, HAM-A, and a structured healthcare-utilization inventory. Among these, a treated subgroup of $n = 187$ (45.4%) was followed across four naturalistic treatment modalities: Pharmacotherapy Alone ($n = 78$), Traditional/Faith Healers Alone ($n = 49$), Combination Care (Pharmacotherapy + Structured Psychological Counseling; $n = 34$), and CBT/Counseling Alone ($n = 26$). Qualitative semi-structured interviews ($N = 27$) were conducted with 19 patients and 8 healthcare providers, analyzed via reflexive thematic analysis. Quantitative analysis of variance revealed significant differences in symptom reduction across modalities ($F(3, 183) = 68.42, p < .001, \eta^2 = .529$). Combination Care produced the highest symptom reduction (mean GAD-7 reduction = 8.62 ± 2.45 ; mean HAM-A reduction = 12.18 ± 3.12) and a 67.6% clinical response rate ($\geq 50\%$ reduction), significantly outperforming Pharmacotherapy Alone (mean GAD-7 reduction = 4.88 ± 2.15 ; 39.7% response) and Traditional Healers (mean GAD-7 reduction = 1.35 ± 1.82 ; 10.2% response). Multivariable logistic regression revealed that treatment success was independently predicted by Combination Care (AOR = 3.84, 95% CI [1.62, 9.12], $p = .002$), high family support (AOR = 3.22, 95% CI [1.54, 6.75], $p = .002$), geographical proximity to care < 10 km (AOR = 2.85, 95% CI [1.31, 6.20], $p = .008$), and secondary education (AOR = 2.48, 95% CI [1.18, 5.21], $p = .017$), whereas severe baseline anxiety impeded recovery (AOR = 0.38, $p = .011$). Biological gender was not an independent predictor (AOR = 0.92, $p = .817$), indicating gender disparities are structurally mediated. Qualitative synthesis uncovered the 'Family Support Paradox': while essential for financing and transport once care began, extended families enforced pre-treatment concealment in 68.4% of patients due to matrimonial stigma. Clinicians exhibited a systemic blind spot, observing only compliant families in clinics. In conclusion, closing the rural mental health treatment gap requires integrating task-shifted community psychological counseling into primary health centers, eliminating transport bottlenecks, and addressing family-mediated stigma outside the clinic walls.

Keywords: Anxiety Disorders; Treatment Gap; Combination Therapy; Task-Shifting; Logistic Regression; Rural Health Systems; Stigma; India.

1. Introduction and Background

Mental, neurological, and substance use disorders contribute extensively to global morbidity, yet the disparity between psychiatric need and treatment provision remains a defining challenge in low- and

middle-income countries (LMICs; World Health Organization [WHO], 2018; Saxena et al., 2007). In India, the National Mental Health Survey (NMHS 2015–16) revealed that over 80% of individuals with common mental disorders, including Generalized Anxiety Disorder (GAD), Social Anxiety Disorder (SAD), and Panic Disorder, receive no formal

psychiatric care (Gururaj et al., 2016; Patel et al., 2016). In rural districts, this treatment gap is compounded by systemic deprivation, geographic isolation, and pervasive stigma (Manjunatha et al., 2022).

While randomized clinical trials have firmly established the efficacy of selective serotonin reuptake inhibitors (SSRIs) and Cognitive Behavioral Therapy (CBT) under controlled clinical conditions (Hofmann et al., 2012; Hofmann & Smits, 2008; Bystritsky et al., 2013), translating these interventions into rural India encounters profound barriers. In Mahoba district, situated in the Bundelkhand region of Uttar Pradesh, public healthcare infrastructure employs zero clinical psychologists, and psychiatric care is restricted to a visiting practitioner under the District Mental Health Programme (DMHP) (Premdas, 2026). Frontline care is delivered by general medical officers in Primary Health Centers (PHCs) and Community Health Centers (CHCs) who manage 150 to 200 outpatients in a single morning, leaving less than two minutes per clinical consultation.

Under these conditions, rural patients navigate a fragmented therapeutic landscape comprising public dispensaries with frequent drug stockouts, private pharmacies dispensing over-the-counter sedatives, and traditional faith healers (Ojhas, Bhagats, and Tantriks) who provide culturally familiar explanations of distress (Thirthalli et al., 2016). Furthermore, the indirect costs of care—where bus travel from remote villages requires an entire day's absence and costs INR 300–400 in lost farm wages—frequently force premature treatment discontinuation (Premdas, 2026). This paper investigates the comparative clinical efficacy of naturalistic treatment modalities, evaluates out-of-pocket costs, and identifies multivariable predictors of anxiety recovery in Mahoba district.

2. Theoretical Framework and Literature Review

To address the chronic shortage of mental health professionals, global mental health theory emphasizes task-shifting and stepped-care models (Patel et al., 2016; Saxena et al., 2007). First validated in India through the landmark MANAS trial in Goa, task-shifting redistributes structured psychosocial interventions to trained non-specialist community health workers and primary care doctors (Patel et al., 2010). The MANAS trial proved that lay health counselors delivering basic psychological support achieved significant improvements in anxiety and depressive disorders relative to routine medical care.

Clinical guidelines recommend combination therapy—pairing pharmacotherapy with structured psychotherapy—for moderate-to-severe anxiety, combining rapid biological stabilization with durable cognitive coping skills (Bhattacharya et al., 2022; Clark & Beck, 2010). In rural India, however, primary care physicians lacking psychotherapeutic resources routinely default to prescribing low-cost benzodiazepines (alprazolam, clonazepam), which provide temporary sedation but risk chemical dependence (Bystritsky et al., 2013).

Treatment engagement is heavily moderated by sociocultural structures (Pescosolido, 2010; Shidhaye & Kermode, 2013). In rural Indian joint families, kinship networks provide vital caregiving and financial support for medical fees (Patel et al., 2010). Conversely, patriarchal families act as gatekeepers who enforce symptom concealment to protect family honor (izzat) and marital prospects, creating a complex sociological dynamic that can delay help-seeking for years (Kermode et al., 2009; Kumar et al., 2020).

3. Research Methodology

This study employed an explanatory sequential mixed-methods design (QUAN → qual; Creswell & Plano Clark, 2018; Ivankova et al., 2006). In Phase 1,

a multistage stratified random sample of N = 412 adult community residents was surveyed across PHCs, CHCs, and community screening camps in Mahoba district (Premdas, 2026). A healthcare-utilization schedule identified that 54.6% (n = 225) had never accessed formal care, while 45.4% (n = 187) had received treatment across four naturalistic modalities: Pharmacotherapy Alone (n = 78), Traditional Healers Alone (n = 49), Combination Care (Pharmacotherapy + Counseling; n = 34), and CBT/Counseling Alone (n = 26).

Standardized instruments administered via interviewer-assisted protocols included the GAD-7 (Spitzer et al., 2006; $\alpha = .874$); the HAM-A (Hamilton, 1959; $\alpha = .891$); a Psychosocial Impairment Rating (1–5 scale); an Out-of-Pocket Expenditure Survey (INR); and Clinical Treatment Outcome (1 = Meaningful Treatment Success, defined as $\geq 50\%$ symptom reduction on GAD-7/HAM-A at post-treatment follow-up, n = 73; 0 = Inadequate Response/Default, n = 114). In Phase 2, purposive maximum-variation sampling selected 19 patients (P-01 to P-19) and 8 clinician key informants (C-01 to C-08; Patton, 2002; Onwuegbuzie & Collins, 2007). Qualitative transcripts were analyzed in NVivo 12 using reflexive thematic analysis (Braun & Clarke, 2006; Cohen's kappa = .84; Guest et al., 2006). Ethical approval was granted by P.K. University under ICMR (2017) and WMA (2013) protocols.

4. Quantitative Results

Among the treated cohort (n = 187), baseline anxiety severity was comparable across groups (GAD-7 means 13.50 to 14.82, $p > .05$). A one-way ANOVA demonstrated highly significant differences in symptom reduction across modalities for the GAD-7, $F(3, 183) = 68.42$, $p < .001$, $\eta^2 = .529$, and clinician-rated HAM-A, $F(3, 183) = 74.15$, $p < .001$, $\eta^2 = .548$ (Table 1).

Table 1: Treatment Modality and Mean Symptom Reduction Among Treated Subgroup (n = 187)

Treatment Modality	n	Baseline GAD-7	Post GA D-7	Mean GAD-7 Red.	Mean HAM-A Red.	Response Rate ($\geq 50\%$)
Combination (Pharma + CBT)	34	14.82 (3.10)	6.20 (2.45)	8.62 (2.45)	12.18 (3.12)	67.6% (23 / 34)
CBT / Counseling Alone	26	13.50 (3.05)	7.08 (2.40)	6.42 (2.30)	9.04 (2.85)	53.8% (14 / 26)
Pharmacotherapy Alone	78	14.15 (3.25)	9.27 (2.80)	4.88 (2.15)	6.72 (2.70)	39.7% (31 / 78)
Traditional Faith Healer	49	13.88 (3.15)	12.53 (3.05)	1.35 (1.82)	1.96 (2.10)	10.2% (5 / 49)
Total Treated Subgroup	187	14.11 (3.18)	9.26 (3.42)	4.85 (3.08)	6.79 (4.25)	39.0% (73 / 187)

Combination Care produced the greatest symptom reduction (mean GAD-7 reduction = 8.62 points, SD = 2.45; mean HAM-A reduction = 12.18 points, SD = 3.12) and a 67.6% response rate. CBT/Counseling alone achieved substantial reduction (mean GAD-7 reduction = 6.42 points; response rate 53.8%), significantly outperforming Pharmacotherapy alone (mean reduction = 4.88 points; response rate 39.7%; Tukey HSD $p < .01$). Traditional healers yielded minimal symptom reduction (mean reduction = 1.35 points; response rate 10.2%). A significant dose-response effect was documented for counseling: 1–3 sessions produced 4.31 points reduction; 4–5 sessions produced 6.24 points; and 6+ sessions produced 8.12 points ($F(2, 57) = 17.84$, $p < .001$).

Table 2: Self-Reported Annual Treatment Cost by Modality and Patient Satisfaction (n = 187)

Treatment Modality	Subsample (n)	Direct Medical Cost (INR)	Travel & Wage Loss (INR)	Total Annual Cost (INR)	Patient Satisfaction
Combination (Pharma + CBT)	34	4,650 (1,150)	2,470 (820)	7,120 (1,850)	76.5% Highly Satisfied
CBT Counseling Alone	26	2,850 (780)	1,600 (540)	4,450 (1,220)	61.5% Satisfied
Pharmacotherapy Alone	78	2,180 (640)	1,200 (450)	3,380 (980)	46.2% Mod. Satisfied
Traditional Faith Healer	49	980 (420)	640 (310)	1,620 (640)	38.8% Satisfied (Comfort)

Cost analysis revealed an acute affordability paradox (Table 2): Combination Care cost INR 7,120 +/- 1,850 annually, consuming 42.8% of median annual income for households in the lowest income bracket (< INR 8,000/month). Traditional healing cost only INR 1,620 +/- 640 and was often settled through agricultural produce, explaining its widespread use despite low clinical efficacy. Contrasting treated participants (n = 187) with never-treated peers (n = 225) proved that clinical care significantly reduced composite functional impairment (M = 3.05, SD = 0.68 vs. M = 3.68, SD = 0.69, $t(410) = 9.28$, $p < .001$, $d = 0.92$), with marked gains in personal well-being ($t = 9.75$) and occupational capacity ($t = 8.70$).

Table 3: Multivariable Logistic Regression: Predictors of Meaningful Treatment Success (n = 187)

Independent Predictor	B	Std. Error	Wald Chi-Square	df	p-value	Adjusted OR (AOR)	95% Conf. Interv
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	Sig						al
Combination Care (Ref: Pharma)	1.345	0.441	9.30	1	.002	3.84	[1.62, 9.12]*
High Family Support (Ref: Low)	1.169	0.377	9.61	1	.002	3.22	[1.54, 6.75]*
Proximity to Care (<10 vs >25 km)	1.047	0.396	6.99	1	.008	2.85	[1.31, 6.20]*
Secondary + Education (Ref: Illiterate)	0.908	0.380	5.71	1	.017	2.48	[1.18, 5.21]*
Household Income (>15k vs <8k INR)	0.485	0.412	1.39	1	.239	1.62	[0.72, 3.65] (ns)
Age (Continuous, per 1-year increase)	-0.018	0.016	1.27	1	.260	0.98	[0.95, 1.01] (ns)
Female Gender (Ref: Male)	-0.083	0.358	0.05	1	.817	0.92	[0.46, 1.86] (ns)
Severe Baseline Anxiety (Ref: Mild/Mod)	-0.968	0.381	6.45	1	.011	0.38	[0.18, 0.80]*
Constant	-1.842	0.785	5.51	1	.019	0.16	--

Multivariable logistic regression (Omnibus Chi-square(8) = 54.78, $p < .001$; Nagelkerke $R^2 = .364$; classification accuracy 78.1%; Table 3) identified four independent positive predictors of recovery: Combination Care (AOR = 3.84, 95% CI [1.62, 9.12],

$p = .002$); High Family Support (AOR = 3.22, 95% CI [1.54, 6.75], $p = .002$); Proximity to Care < 10 km (AOR = 2.85, 95% CI [1.31, 6.20], $p = .008$); and Secondary Education (AOR = 2.48, 95% CI [1.18, 5.21], $p = .017$). Severe baseline anxiety reduced success odds by 62% (AOR = 0.38, $p = .011$). Female gender was not an independent predictor (AOR = 0.92, $p = .817$), confirming that gender disparities are structurally mediated.

5. Qualitative Findings: Structural Fractures and Clinical Dilemmas

Thematic analysis revealed the 'Family Support Paradox': while family support predicted treatment success (AOR = 3.22), extended families simultaneously enforced pre-treatment concealment in 68.4% of patient interviews due to matrimonial stigma and caste honor (izzat).

"My mother-in-law warned me strictly: 'Keep the door shut when your breath gets fast. If the village people see you gasping and weeping, who will marry your husband's younger sister? They will say there is madness in our blood.' My family gave me food and watched my babies, yes, but they locked my suffering inside four walls."

— P-08, 31-year-old rural woman, Kabrai (Illiterate, Panic Disorder)

"In the village, weakness is a crime. If you are known to have a nervous illness, the moneylender will not advance credit for fertilizer, and nobody will give their daughter to your family. My elder brother told me to swallow it down and go to the fields. We hide the medicines inside a tobacco tin."

— P-05, 38-year-old male farmer, Srinagar (High School, GAD/SAD Defaulter)

This dynamic generated a clinician blind spot: clinicians viewed families as uniformly benevolent (C-01: 'Families travel 40 km and hold the patient's

hand; I rarely see active cruelty'), failing to observe the covert concealment operating within village households.

Under overwhelming outpatient queues (150–200 patients in 3–4 hours) and zero deployed clinical psychologists, general physicians routinely prescribed low-cost benzodiazepines. Clinician C-04 explained: 'I have 180 patients in 3 hours—90 seconds per patient. I write alprazolam. It is not a cure, but it stops the panic attack today. It is survival medicine.' Patients reported severe distress regarding dependency: Patient P-18 noted that 'the white pills made me feel like a wooden log (lakdi ki tarah sunn), unable to work in the fields.' Conversely, patients receiving combination counseling praised learning breathing techniques and cognitive reframing as life-saving.

"To visit the hospital in Mahoba city, my brother must take off from daily labor, losing four hundred rupees. Bus fares cost three hundred rupees. We reach the OPD at 9:00 AM, stand in a line of two hundred people until 1:00 PM, and the doctor sees me for two minutes. He writes a prescription for medicines not available in the government counter. How can a family that earns six thousand rupees a month spend a thousand rupees on one single day?"

— P-12, 29-year-old casual laborer, Srinagar (Panic Disorder)

6. Mixed-Methods Integration and Discussion

Joint display synthesis (Table 4; Fetter et al., 2013) demonstrated that Combination Care excels because pharmacotherapy stabilizes autonomic hyperarousal while counseling reframes objective life stressors. The Family Support Paradox explains why family involvement predicts treatment success while maintaining the pre-treatment gap: families are indispensable for treatment logistics once initiated, but actively suppress initial presentation.

Table 4: Joint Display Matrix of Treatment Outcomes, Predictors, and Structural Traps

Quantitative Predictor	Qualitative Insight	Mixed-Methods Synthesis & Policy Implication
Combination Care AOR = 3.84 (p = .002; 67.6% response)	Patients praise counseling for perspective; fear dependence from pills alone	Convergence: Combination therapy excels because pharmacotherapy stabilizes biology while counseling reframes stressors.
High Family Support AOR = 3.22 (p = .002; positive predictor)	Families provide essential care labor, but enforce pre-treatment secrecy (68.4%)	Divergence / Expansion: The Family Support Paradox—family is essential for adherence but acts as the primary barrier to initial help-seeking.
Geographic Proximity AOR = 2.85 (p = .008; <10 km vs >25 km)	Catastrophic wage losses (INR 300–400) and infrequent buses trap rural patients	Expansion: Physical distance outperforms household income in regression models because transport bottlenecks are absolute.
Female Gender AOR = 0.92 (p = .817; non-significant)	Women face heavy domestic strain, but recover equally when family enables care	Expansion: Gender disparities in recovery are mediated by structural access (literacy and mobility) rather than biological intractability.

These findings provide compelling empirical justification for task-shifted community interventions modeled on the MANAS trial (Patel et al., 2010; Patel et al., 2016). The documented dose-response effect ($F = 17.84$, $p < .001$) proves that even 4–5 counseling sessions produce substantial symptom reduction (mean GAD-7 reduction = 6.24). Training accredited social health activists (ASHAs) and PHC nursing staff to deliver basic cognitive-behavioral counseling (psychoeducation, diaphragmatic breathing, behavioral activation) would bring combination care to village sub-centers, eliminating travel bottlenecks (AOR = 2.85) and bypassing catastrophic private costs.

7. Policy Recommendations and Conclusion

Four health policy interventions are recommended: (1) Decentralize Psychosocial Counseling via Task-Shifting: Train non-specialist community health workers to deliver brief, structured counseling at PHCs and CHCs alongside standard pharmacotherapy; (2) Buffer Psychotropic Supply Chains: Maintain reliable stocks of generic SSRIs (escitalopram, sertraline) at government CHCs, while restricting routine long-term benzodiazepine prescriptions; (3) Village-Level Anti-Stigma Outreach: Target household elders and panchayat leaders to dismantle the family concealment mandate that delays initial presentation; and (4) Synchronize Care Schedules with Agricultural Cycles: Provide multi-month medication buffer stocks prior to sowing and harvesting windows to prevent seasonal treatment defaults.

In conclusion, closing the rural mental health treatment gap requires looking beyond clinical trial efficacy. Real-world anxiety recovery in rural India depends on eliminating transport traps, addressing family-enforced stigma outside clinic walls, and decentralizing structured psychosocial care to the primary health level.

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