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Obsessional beliefs, cognitive distortions and metacognitive thinking in clinical and non-clinical populations

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Abstract

Obsessive thoughts are intrusive, repetitive cognitive experiences that occur across a continuum from benign, transient phenomena in the general population to persistent and distressing symptoms in clinical conditions such as obsessive–compulsive and anxiety disorders. Contemporary cognitive and metacognitive models suggest that the pathological significance of these thoughts is determined less by their occurrence and more by the beliefs individuals hold about them. The present study aimed to comparatively examine obsessional beliefs, cognitive distortions, and metacognitive thinking in clinical and non-clinical populations, and to explore the differential patterns of association among these variables. Using a comparative quantitative design, the study assessed 300 adults from Rajasthan, comprising 150 non-clinical participants and 150 clinically diagnosed individuals with anxiety disorders, obsessive–compulsive disorder, or generalized anxiety disorder. Standardized psychometric instruments were employed to measure dysfunctional attitudes, obsessional beliefs, metacognitive processes, and obsessive–compulsive symptomatology, alongside a semi-structured interview to capture qualitative aspects of intrusive thought experiences. Statistical analyses included independent samples t-tests and Pearson correlation analyses. Results indicated that clinical participants reported significantly higher frequency of obsessional thoughts than non-clinical participants, despite intrusive thoughts being present in both groups. Cognitive distortions were consistently and moderately associated with obsessional beliefs across both populations, suggesting a stable underlying cognitive mechanism. However, metacognitive thinking demonstrated a stronger relationship with obsessional beliefs in the clinical group, highlighting its enhanced role in symptom maintenance among clinically distressed individuals. These findings support continuum-based models of obsessional phenomena and underscore the importance of metacognitive processes in differentiating clinical from non-clinical functioning. The study emphasizes the need for integrative intervention approaches that address both cognitive distortions and maladaptive metacognitive beliefs to improve clinical outcomes and inform preventive strategies.

Keywords: Obsessive Thoughts; Cognitive Beliefs; Metacognition; Intrusive Thoughts; OCD; Clinical Psychology

1. Introduction

Obsessive thought process is an intrusive and recurrent cognitive phenomenon that manifests in the general population as well as individuals with psychological disorders (Purdon & Clark, 1993). From a cognitive view, obsessions are characterized not only by their existence but by the significance ascribed to them, their occurrence frequency, and the methods utilized for their management also (Rachman, 1998). Modern psychological research has revealed that obsessional thinking exists on a continuum, extending from benign intrusive thoughts in non-clinical individuals to enduring to distressing obsessions in clinical populations (Audet et al., 2023; Clark & Purdon, 1993).

Traditional models initially regarded obsessions as pathological phenomena exclusive to Obsessive-Compulsive Disorder (OCD). However, subsequent empirical evidence revealed that intrusive thoughts are nearly universal experiences, reported by approximately 70–80% of individuals in the general population. The essential distinguishing

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factor is not the existence of these thoughts, but rather the cognitive distortions and metacognitive beliefs that influence their interpretation and regulation (Brock et al., 2024; Hinuma et al., 2025).

Cognitive beliefs, known as schemas, are long-lasting ideas that people have about themselves, the world, and their inner experiences. These beliefs affect how we see things, how we feel, and how we act. In the realm of obsessional thinking, particular cognitive distortions-such as catastrophizing, exaggerated responsibility, perfectionism, and intolerance of uncertainty-can enhance the perceived importance of intrusive thoughts, converting neutral mental occurrences into sources of distress (Abbara et al., 2018). Cognitive theory posits that maladaptive beliefs function at various levels: Fundamental beliefs, Intermediate beliefs and automatic thoughts. In obsessive presentations, distorted cognitive beliefs cause people to think there is more danger than there is, make them feel more responsible, and connect their thoughts to their actions, which keeps their obsessive anxiety going (Bandura, 2014).

Metacognition consisting of two factors i.e., knowledge and regulation delas with the intrusive thoughts of a person and is defined as "thinking about thinking" (Peña-Ayala, 2015). Metacognitive beliefs encompass evaluations regarding the perilousness, manageability, and significance of thoughts. People who think they need to control their thoughts or that having a thought is the same as acting on it tend to be more upset and use unhealthy ways to deal with their problems, like trying to ignore their thoughts or thinking about them over and over again (Havnen et al., 2024).

Wells' metacognitive model posits that psychological distress is sustained not solely by cognitive content, but by maladaptive metacognitive beliefs that engender a cognitive-attentional syndrome, defined by worry, threat monitoring, and ineffective control strategies. Empirical evidence consistently indicates that metacognitive beliefs independently forecast obsessive-compulsive symptoms, surpassing conventional cognitive variables (Wells, 1995; Wells & Papageorgiou, 1998).

Intrusive thoughts manifest in various populations, and individuals lacking clinical diagnoses generally regard these thoughts as inconsequential or ephemeral. Conversely, clinical populations perceive these thoughts as threatening, unacceptable, or hazardous, leading to chronic anxiety and compulsive behaviors. This distinction highlights the necessity of investigating the differential interactions between cognitive distortions and metacognitive thinking across various populations (Rachman, 1998).

Tthere has been considerable research on cognitive distortions and metacognition separately (Grossmann & Johnson, 2025; Helmond et al., 2015; Özdemir & Kuru, 2023; Peña-Ayala, 2015; Wells, 2011; Wells et al., 2020), however, comparative studies exploring their synergistic influence on obsessional beliefs in both clinical and non-clinical populations are lacking. Most research concentrates solely on clinical samples or investigates individual constructs in isolation. As a result, there is inadequate comprehension of the development and maintenance of obsessional beliefs throughout the spectrum of mental health . Therefore, the current study seeks to contrast the prevalence of obsessive thoughts between clinical and non-clinical populations, to investigate the interrelations among cognitive distortions, metacognitive processes, and obsessional beliefs within each demographic and to identify distinct patterns of association that differentiate clinical from non-clinical functioning.

2. Methodology

2.1. Research Design and Sample

This research employed a comparative quantitative design investigating two distinct groups: 150 community-dwelling healthy adults (normal or non-clinical group) and 150 individuals diagnosed with Anxiety Disorders, Obsessive-Compulsive Disorder, or Generalized Anxiety Disorder (clinical group). Participants were recruited from Rajasthan through purposive sampling methodology, facilitating targeted recruitment of individuals meeting specific inclusion and exclusion criteria.

Inclusion criteria for non-clinical participants comprised: age between 18-40 years, educational attainment of 10th standard or above, and residence in urban or rural areas (Sundar 2020). Exclusion criteria eliminated individuals with known psychiatric or neurological histories. For clinical participants, inclusion criteria specified formal diagnosis with Anxiety Disorders, OCD, or GAD according to ICD-10 criteria, educational attainment of 10th standard or above, and urban or rural residence. Exclusion criteria eliminated individuals diagnosed with Major Psychiatric or Neurological conditions beyond the specified anxiety disorders (Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004).

2.2. Procedure

Data collection was completed through standardized protocols with consistency and high ethical compliance. All participants were asked to submit a written consent after receiving detailed study information. The assessment battery was administered in individual sessions lasting approximately 45-60 minutes, conducted by trained research assistants blind to group assignment. Non-clinical participants completed assessments in community settings or university laboratories, while clinical participants completed assessments in outpatient mental health clinics and hospital settings. The semi-structured interview was conducted following completion of quantitative measures, allowing participants to provide detailed descriptions of their obsessional experiences in their own words. All data were collected confidentially with participant identification codes replacing names, stored in secure password-protected databases accessible only to authorized research personnel (Wells & Cartwright-Hatton, 2004).

2.3. Data Entry and Quality Assurance

Data entry was performed as per the method proposed by Paulsen et al. (2012). A double-entry verification procedure was used with discrepancies reconciled through consultation of original questionnaires (Paulsen et al., 2012). Missing data were examined for patterns; less than 2% missing values occurred across all measures, analyzed using expectation-maximization procedures appropriate for missing data mechanisms (Malan et al., 2020). Outlier analysis using box plots and z-scores identified extreme values within acceptable ranges; no cases demonstrated impossible response patterns or statistical impossibilities (Ciccione et al., 2023).

2.4. Assessment Instruments

The investigation utilized multiple validated psychometric instruments. The Sociodemographic Questionnaire captured basic demographic information including age, sex, educational qualification, religion, marital status, occupation, socioeconomic status, and psychiatric/medical history (Salami, 2010).

The Modified Mini Screen (MMS), a 22-item scale assessing mood disorders, anxiety disorders, and psychotic disorders, demonstrated strong internal reliability (Cronbach's alpha = 0.92) and temporal stability ($\rho = 0.71$). This instrument facilitated exclusion of participants with psychiatric diagnoses beyond those specified (Alexander et al., 2008; Spotts, 2008).

The Dysfunctional Attitude Scale Form A (DAS-A) consists of 40 items rated on 7-point Likert scales, with total scores ranging from 40-280, measuring dysfunctional cognitive beliefs and distortions (Power et al., 1994). Higher scores indicate greater cognitive distortion presence.

The Obsessive Beliefs Questionnaire-44 (OBQ-44), developed by the Obsessive Compulsive Cognitions Working Group (Myers et al., 2008), contains 44 items representing three subscales: Responsibility/Threat Estimation (16 items), Perfectionism/Certainty (16 items), and Importance/Control of Thoughts (12 items), with excellent internal consistency (Cronbach's alphas 0.90-0.93).

The Metacognition Questionnaire-30 (MCQ-30) assesses five metacognitive factors: cognitive confidence, positive beliefs about worry, cognitive self-consciousness, negative beliefs about uncontrollability and danger of thoughts, and beliefs about the need to control thoughts (Grøtte et al., 2016). This instrument captures the key metacognitive mechanisms implicated in Wells' metacognitive model.

The Padua Inventory-Washington State University Revision (PI-WSUR) comprises 39 items rated on 5-point scales measuring obsessive-compulsive symptoms across five subscales: obsessive thoughts about harm, obsessive impulses, contamination obsessions/washing compulsions, checking compulsions, and dressing/grooming compulsions (Lot & Very, 1995; Rubio-Aparicio et al., 2020). This instrument provided comprehensive assessment of OC symptom severity and content.

A Semi-Structured Interview based on four core questions examined: presence of repetitive or intrusive thoughts, thought content, thought frequency, and coping strategies employed (Adams, 2015). This qualitative component complemented quantitative measures.

2.5. Data Analysis

Statistical analyses employed parametric tests assessing group differences and relationships. Independent samples t-tests compared groups on continuous variables, with Levene's test assessing homogeneity of variance assumptions (Mahmoud Fakhe et al., 2021). Pearson correlation analyses examined relationships among cognitive distortions, metacognitive thinking, and obsessional beliefs within each population separately, recognizing potential differences in

variable relationships across groups (Pearson, 1933, 1956). Chi-square tests examined categorical demographic associations (Greenwood & Nikulin, 1996). All analyses utilized SPSS version 26.0 (IBM Corporation, Armonk, NY) for all statistical procedures, with significance levels established at $p < 0.05$ (two-tailed). Effect sizes were calculated for all group comparisons using Cohen's d, interpreted (Cohen, 2013) as small (d = 0.2), medium (d = 0.5), or large (d = 0.8). Assumptions for parametric testing were examined; Shapiro-Wilk tests (Shapiro & Wilk, 1965) assessed normality (non-significant values indicating acceptable normality), and Levene's test assessed homogeneity of variance.

3. Results

3.1. Demographic Profile

The demographic profile (Figure 1) of the non-clinical group (N = 150) represented substantial differences among age, sex, education, religion, marriage status, and occupation. The 25-30 age bracket had the highest proportion of participants (61%), followed closely by 20-25 years (31%) and 30-35-year range (8%) having the lowest. Female participation is much higher (73%) than male participation (27%). In terms of education level, 46% of respondents were graduates, while 27% of respondents held professional degrees (CA, PhD, Advocate) with the rest consisting of 13.5% high school and 13.5% postgraduate students. The overwhelming majority of the population identified themselves as Hindu (91%), followed by lesser percentages of Jain (4%), Muslim (3.5%) and Christian (1.5%). Of those surveyed 56% were married and 44% were single. Participants were employed in a variety of professions: private employees (23%); students (22%); business owners (20%); government employees (19%); and homemakers (16%). The varied age and occupation distributions provide an ample cross-section of the broad non-clinical population.

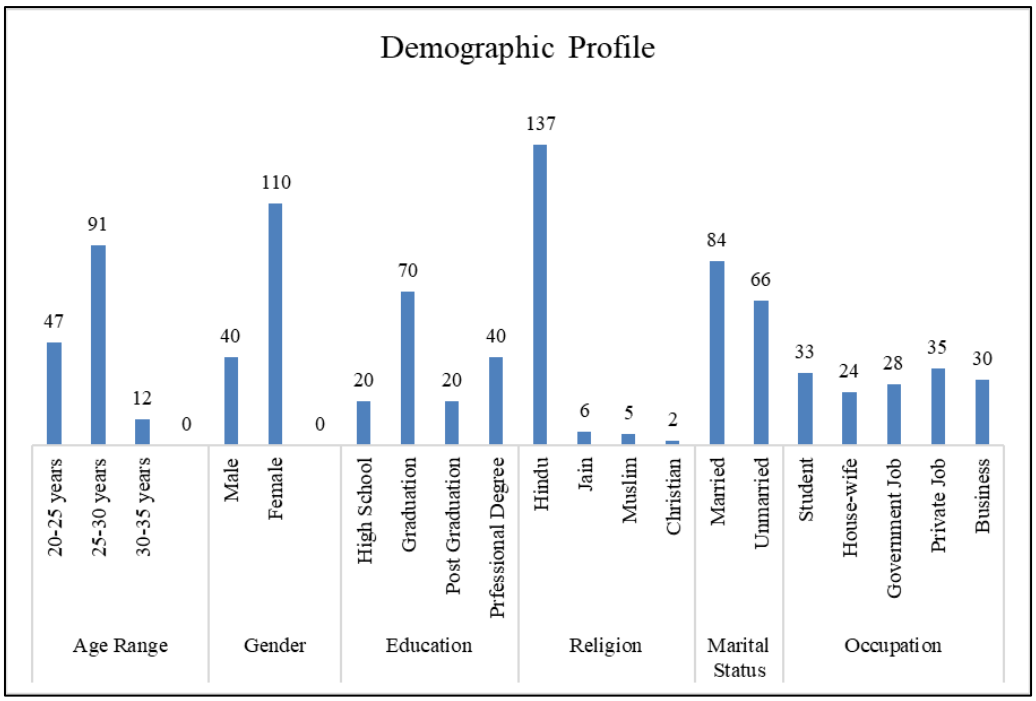

Figure 1 Demographic Profile of Non Clinical Group

3.2. Frequency of Obsessions Across Populations

An independent samples t-test revealed statistically significant differences in obsession frequency between non-clinical and clinical groups as discussed in Table 1. The clinical group reported substantially higher frequency of obsessional thoughts (M = 2.75, SD = 1.52) compared to the non-clinical group (M = 0.33, SD = 0.88), representing a mean difference of -2.42 with 95% confidence interval from -3.06 to -1.77, $t(280.76) = -7.381$, $p < 0.001$. Levene's test indicated unequal variances ($F = 21.297$, $p < 0.001$), confirming distinct variance structures across groups. This substantial frequency difference suggests that clinical populations experience qualitatively different obsessional thought patterns than non-clinical populations, even though intrusive thoughts occur across both.

Table 1 Frequency of Obsessions Comparison Between Groups

Group	Mean Frequency	Std. Deviation	N
Non-Clinical	0.33	0.88	150
Clinical	2.75	1.52	150
Mean Difference	-2.42	$p < 0.001$	$t = -7.381$

The substantial frequency difference between clinical and non-clinical populations aligns with existing literature demonstrating that clinical presentations involve more persistent and pervasive obsessional thoughts. The magnitude of this difference (-2.42 mean points) suggests clinical populations experience obsessions with substantially greater intensity and persistence. This finding supports theoretical models proposing that cognitive appraisal processes-rather than thought frequency alone-determine clinical significance.

3.3. Cognitive Distortions, Metacognitive Thinking, and Obsessional Beliefs Relationships

3.3.1. Non-Clinical Population

In the non-clinical population, Pearson correlation analysis (Pearson) revealed significant positive relationships among all three variables as discussed in Table 2. Cognitive distortions (DAS-A) (Power et al., 1994) showed moderate positive correlation with obsessional beliefs ($r = .47$, $p < 0.01$), indicating that dysfunctional cognitive patterns associate with more pronounced obsessive belief endorsement. Cognitive distortions demonstrated weak positive correlation with metacognitive thinking ($r = 0.17$, $p < 0.05$), suggesting a modest relationship between distorted thinking and metacognitive processes. Metacognitive thinking and obsessional beliefs were significantly positively correlated ($r = .21$, $p < 0.01$), indicating that increased metacognitive concerns are associated with stronger obsessive beliefs.

Table 2 Correlation Matrix: Non-Clinical Population

	Cognitive Distortion (DAS-A)	Metacognitive Thinking	Obsessional Beliefs
Cognitive Distortion (DAS-A)	1		
Metacognitive Thinking	0.17*	1	
Obsessional Beliefs	0.47**	0.21**	1

The relatively modest correlations in the non-clinical population suggest that cognitive distortions and metacognitive processes operate somewhat independently in individuals without diagnosed anxiety disorders (Hossain, 2025). This pattern indicates that non-clinical individuals who experience cognitive distortions do not necessarily develop problematic metacognitive beliefs or strong obsessive beliefs, suggesting some protective mechanism limiting the translation of distorted thinking into obsessional symptomatology. The stronger relationship between cognitive distortions and obsessional beliefs ($r = .47$) than between metacognitive thinking and obsessional beliefs ($r = .21$) suggests cognitive content may drive belief formation more directly in non-clinical populations, though metacognitive appraisal still contributes meaningfully (Nance et al., 2018).

3.3.2. Clinical Population

In contrast, the clinical population demonstrated a notably different pattern as discussed in Table 3. Cognitive distortions showed a significant negative correlation with metacognitive thinking ($r = -0.27$, $p < 0.01$), a finding absent in the non-clinical sample (Kim et al., 2021). This unexpected negative relationship may reflect the complex dynamics of clinical obsessive-compulsive presentations. Higher dysfunctional attitudes may paradoxically associate with lower reported metacognitive concerns, possibly because individuals with severe obsessive beliefs employ different coping or reporting patterns (Solem et al., 2009). Alternatively, successful cognitive therapy focusing on attitude restructuring may reduce dysfunctional attitudes while metacognitive beliefs remain elevated until targeted through metacognitive intervention (Strand et al., 2024).

Table 3 Correlation Matrix: Clinical Population

	Cognitive Distortion (DAS-A)	Metacognitive Thinking	Obsessional Beliefs
Cognitive Distortion (DAS-A)	1		
Metacognitive Thinking	-0.27**	1	
Obsessional Beliefs	0.44**	0.32**	1

Cognitive distortions maintained strong positive correlation with obsessional beliefs in the clinical population ($r = 0.44$, $p < 0.01$), comparable to the non-clinical finding ($r = .47$), suggesting this relationship remains robust across populations. Notably, metacognitive thinking showed stronger association with obsessional beliefs in the clinical population ($r = .32$, $p < 0.01$) compared to non-clinical ($r = .21$, $p < 0.01$). This elevated association indicates that metacognitive processes play a more prominent role in obsessional belief formation and maintenance in clinical populations, consistent with metacognitive models emphasizing that dysfunctional metacognitive beliefs perpetuate obsessive-compulsive symptoms.

4. Discussion: Integration and Theoretical Implications

The substantial frequency difference between clinical and non-clinical populations (-2.42, $p < 0.001$) fundamentally supports theoretical models proposing that cognitive appraisal and metacognitive processes mediate the translation of intrusive thoughts into clinical symptomatology. Both populations experience intrusive thoughts-consistent with research indicating 77% of non-clinical samples report obsessive experiences-yet only in clinical populations do these thoughts reach problematic frequency and distress. This differential frequency underscores that mechanisms beyond thought occurrence determine clinical significance (Lowery, 2002).

The contrasting patterns of variable relationships in non-clinical versus clinical populations illuminates differential maintenance mechanisms. In non-clinical individuals, cognitive distortions show moderate association with obsessional beliefs ($r = 0.47$) and weak association with metacognitive thinking ($r = 0.17$), suggesting cognitive content-level beliefs drive obsessional symptom formation more directly (Murat, 2024). In clinical populations, metacognitive processes show enhanced association with obsessional beliefs ($r = 0.32$ vs. $r = 0.21$), indicating that in clinical presentations, how individuals think about their thinking-their metacognitive beliefs about thought dangerousness, uncontrollability, and the necessity of control-plays a more prominent role (Oussi & Bouvet, 2023).

These patterns align with Wells' metacognitive model, which proposes that metacognitive beliefs represent core maintenance factors in anxiety and obsessive-compulsive disorders (Wells & Papageorgiou, 1998). The negative correlation between cognitive distortions and metacognitive thinking in the clinical population ($r = -0.27$) may reflect the complex interplay of therapeutic history, symptom severity, and coping patterns in treated clinical samples (Tanrıverdi & Özgüç, 2023). Individuals receiving cognitive therapy may show reduced dysfunctional attitudes while metacognitive beliefs remain elevated, particularly if metacognitive therapy has not yet been implemented (Strand et al., 2024).

The robust positive correlations between cognitive distortions and obsessional beliefs across both populations ($r = 0.47$ non-clinical, $r = 0.44$ clinical) suggest this relationship represents a fundamental mechanism in obsessive-compulsive phenomena (Murat, 2024). Dysfunctional attitudes regarding self-worth, perfectionism, and control appear consistently associated with obsessive belief endorsement, whether in clinical or non-clinical contexts (Bhar & Kyrios, 1999). This finding supports cognitive models emphasizing the role of maladaptive beliefs in obsessive-compulsive symptomatology (Doron et al., 2016; Wilhelm et al., 2015).

5. Conclusion

This investigation examined obsessional beliefs, cognitive distortions, and metacognitive thinking in clinical and non-clinical populations, revealing both common underlying mechanisms and population-specific patterns. The statistically significant frequency difference between groups ($t = -7.381$, $p < 0.001$) demonstrates that clinical populations experience substantially more persistent and distressing obsessional thoughts, despite intrusive thoughts occurring universally. This finding underscores that cognitive and metacognitive appraisal processes-rather than thought occurrence itself-determine clinical significance.

Correlation analyses revealed that cognitive distortions associate consistently with obsessional beliefs across both populations ($r \approx .45$), suggesting this relationship represents a fundamental mechanism in obsessive-compulsive phenomena (Murat 2024). However, metacognitive thinking shows differential associations: modestly related to obsessional beliefs in non-clinical populations ($r = 0.21$) but more substantially related in clinical populations ($r = 0.32$). This differential pattern suggests that metacognitive beliefs-particularly beliefs about thought dangerousness, uncontrollability, and the necessity of control-serve as more prominent maintenance factors in clinical presentations (Keskinpala, 2024).

The contrasting variable relationships across populations support the theoretical conceptualization of obsessive-compulsive phenomena as existing on a continuum mediated by metacognitive processes (Keskinpala, 2024). Non-clinical individuals with cognitive distortions do not invariably develop obsessional beliefs or prominent metacognitive concerns, suggesting protective mechanisms operate in non-clinical functioning (Murat, 2024). Clinical populations demonstrate tighter coupling between variables, indicating that dysfunctional cognition translates more directly to obsessive beliefs and metacognitive concerns requiring intervention (Sun et al., 2017).

These findings have important implications for intervention development. Cognitive-behavioral approaches targeting dysfunctional attitudes may effectively reduce cognitive distortions, yet metacognitive therapy specifically targeting beliefs about thought control, dangerousness, and uncontrollability may prove necessary for optimal clinical outcomes in obsessive-compulsive presentations (Keskinpala, 2024; Murat, 2024). Future research should investigate whether combined cognitive-metacognitive interventions demonstrate superior efficacy compared to single-modality approaches, and whether early identification of problematic metacognitive beliefs facilitates prevention in at-risk non-clinical populations.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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