

Prevalence and Clinical Correlates of Sexual Dysfunction in Drug-Naïve Male Patients with First-Episode Depression

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Abstract

Sexual dysfunction is increasingly recognised as intrinsic to depression rather than solely a treatment effect, but most research has examined antidepressant-induced dysfunction, with few studies in drug-naïve, first-episode patients. This cross-sectional study determined the prevalence, domain-wise pattern, and clinical correlates of sexual dysfunction in 94 drug-naïve men aged 18–60 years with first-episode depressive disorder (ICD-11) at a tertiary care hospital in North India. Severity was assessed using the Hamilton Rating Scale for Depression (HAM-D) and sexual functioning using the 14-item Changes in Sexual Functioning Questionnaire–Male version (CSFQ-14); associations with age, illness duration, and severity were examined using Spearman's correlation. Sexual dysfunction was present in 54 participants (57.45%); desire/frequency, desire/interest, arousal/excitement, and orgasm domains were each impaired in 66/94 (70.21%), and pleasure in 62/94 (65.96%). Illness duration correlated strongly with overall sexual function ($\rho = -0.79$, $P < 0.001$) and all domains ($\rho = -0.70$ to -0.82 , $P < 0.001$); severity showed a moderate negative correlation ($\rho = -0.48$, $P < 0.001$). Age was not significantly associated, except for weak correlations with pleasure and orgasm. Sexual dysfunction is highly prevalent before antidepressant exposure in first-episode depression, driven predominantly by illness duration and severity rather than age, supporting routine baseline sexual health assessment before treatment initiation.

Introduction

Depression is a common mental health disorder, estimated to affect more than 264 million people worldwide¹, and 2.68% of adults in India². It is increasingly recognised that sexual dysfunction is an intrinsic feature of depression rather than solely a treatment effect, arising from serotonergic and dopaminergic dysregulation, anhedonia, and altered reward processing³.

Evidence for this illness-related origin comes from several lines of research. A systematic review and meta-analysis of prospective cohort studies by Atlantis and Sullivan⁴ found that depression significantly increased the subsequent risk of sexual dysfunction, and sexual dysfunction similarly increased the risk of subsequent depression, establishing a bidirectional relationship not explained by medication effects alone. This was corroborated by a systematic review and meta-analysis restricted specifically to unmedicated patients with depressive disorders⁵, which reported an overall sexual dysfunction prevalence of 63.26% among unmedicated men with major depressive disorder, with impairment most marked in desire (40.32%), erectile function (32.07%), and orgasm (35.27%) domains. An Indian cross-sectional study of 200 men with major depressive disorder⁶ similarly found sexual dysfunction in 41% of patients, significantly associated with depression severity; notably, in nearly half (45.12%) of the affected patients, the onset of dysfunction preceded initiation of antidepressant therapy, reinforcing the contribution of the depressive illness itself.

Beyond its prevalence, sexual dysfunction related to depression carries considerable clinical significance. Kennedy and Rizvi⁷ noted that it is not only a core symptom of depression but is also

among the most frequent adverse effects of antidepressant pharmacotherapy and a leading cause of premature treatment discontinuation. Werneke et al.⁸ estimated that up to 70% of depressed patients may experience some form of sexual dysfunction, with tricyclic antidepressants, selective serotonin reuptake inhibitors, and venlafaxine most likely to exacerbate pre-existing impairment.

However, disentangling illness-related sexual dysfunction from antidepressant-induced dysfunction remains challenging, since much of the available evidence is drawn from medicated cohorts. The ELIXIR study⁹ involving 4557 depressed patients in France found sexual dysfunction in 69% of participants overall when actively elicited through structured questioning; although rates were somewhat higher among treated patients (71%) than among those not yet started on antidepressants (65%), the substantial burden observed even in the untreated group indicated a considerable illness-related baseline contribution. An Indian prospective study by Thakurdesai and Sawant¹⁰ reported sexual dysfunction in 62.5% of male patients with depression, with significant impairment in desire, orgasm, and overall satisfaction. In one of the few studies to specifically quantify sexual function prior to any antidepressant exposure, Kennedy et al.¹¹ assessed 134 patients with major depression (55 men, 79 women) and found reduced sexual desire to be the most frequently reported problem among men (42%), with just over a quarter (26%) reporting complete absence of sexual activity in the preceding month, even before pharmacotherapy had begun.

Despite this body of evidence, an important gap remains: few studies have specifically evaluated sexual dysfunction in male patients restricted to drug-naïve, first-episode depression, a population in which confounding from prior antidepressant exposure and illness chronicity is minimised. This gap is particularly relevant in the Indian context, where most existing data on depression-related sexual dysfunction are drawn from mixed or partially medicated samples, and structured, domain-wise evaluation using validated instruments remains limited. Establishing the baseline burden of sexual dysfunction in this specific population is important both for accurate attribution of dysfunction (illness-versus treatment-related) and for informing pre-treatment counselling. The present study was therefore designed to determine the prevalence, domain-wise pattern, and clinical correlates (age, illness duration, and depression severity) of sexual dysfunction in drug-naïve male patients with first-episode depression.

Materials and Methods

Study design and setting

We conducted a cross-sectional observational study, reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines¹², in the Department of Psychiatry of a tertiary care hospital in North India, over a 12-month period (July 2023–June 2024). The study was carried out after obtaining approval from the Institutional Ethics Committee (IEC letter no. 134 X/11/13/2023-IEC/DHR/21, dated 10th June 2023) and all procedures were performed in accordance with the ethical standards of the responsible institutional committee and the 1964

Declaration of Helsinki and its later amendments. Written informed consent was obtained from all participants.

Participants

Drug-naïve male patients aged 18–60 years presenting to the psychiatry outpatient department (OPD) with a diagnosis of first-episode depressive disorder according to the International Classification of Diseases, 11th Revision (ICD-11), who were sexually active and cohabiting with a partner for at least one year, and willing to provide written informed consent, were included. Patients with a history of previous antidepressant treatment, psychotic symptoms, comorbid psychiatric disorders, substance use disorders other than nicotine, or medical/surgical conditions likely to affect sexual functioning or mood (diabetes mellitus, hypertension, thyroid dysfunction, neurological disorders, cardiovascular disease, and pelvic surgeries) were excluded.

Sampling and sample size

Participants were recruited using consecutive sampling. Of 167 patients screened at the psychiatry OPD during the study period, 73 were excluded on the predefined exclusion criteria, yielding a final sample of 94 participants (Fig. 1). The minimum required sample size was estimated using the formula $n = Z^2pq/d^2$, assuming an expected sexual dysfunction prevalence of 55%¹³ as reported by Fabre et al. in a cohort of depressed men, a 95% confidence level ($Z = 1.96$), and an absolute precision (d) of 10%, yielding a requirement of approximately 95 participants. Bound by the fixed 12-month recruitment window and stringent eligibility criteria, the final sample fell one participant short of this target, a shortfall unlikely to have materially affected the precision of the prevalence estimates reported.

Procedure and ethical considerations during assessment

Patients were first assessed by the treating psychiatrist for diagnosis and eligibility, following which the first author screened them against the predefined inclusion and exclusion criteria. Eligible participants then underwent detailed evaluation using standardised instruments; all assessments (semi-structured proforma, M.I.N.I., HAM-D, and CSFQ-14) were completed in a single sitting requiring approximately 45–50 minutes. Participants identified during assessment as having severe depressive symptoms, suicidal ideation, or clinically significant sexual dysfunction warranting further evaluation were liaised with the treating psychiatrist for appropriate clinical management; participation in the study did not delay or replace routine clinical care at any stage.

Instruments

A semi-structured proforma, developed for this study, was used to record sociodemographic data (age, education, occupation, socioeconomic status, residence) and clinical details.

The Mini International Neuropsychiatric Interview (M.I.N.I.)¹⁴ is a brief structured diagnostic interview for DSM-IV/ICD-10 psychiatric disorders, with good inter-rater and test–retest reliability (kappa generally ≥ 0.75) and validity comparable to longer diagnostic instruments; it was administered by the first author, trained in its standardised administration, to exclude psychiatric disorders other than depression.

Severity of depressive symptoms was assessed using the 17-item Hamilton Rating Scale for Depression (HAM-D)¹⁵, one of the most widely used clinician-rated severity measures, with inter-rater reliability generally reported in the good-to-excellent range and internal consistency reported between 0.46 and 0.97 across validation studies¹⁶. Symptoms over the preceding week were rated, and severity was categorised as mild (score 8–16), moderate (17–23), or severe (≥ 24) using empirically derived cutoffs.

Sexual functioning was assessed using the 14-item Changes in Sexual Functioning Questionnaire – Male version (CSFQ-14)¹⁷, a validated instrument with good internal consistency (Cronbach's alpha approximately 0.87–0.94 across domains) and established convergent validity, which evaluates sexual functioning over the preceding four weeks relative to usual functioning across the domains of desire, arousal, orgasm, and pleasure. In the present study, the following domain subsets were evaluated: Sexual Pleasure (Item 1), Sexual Desire/Frequency (Items 2–3), Sexual Desire/Interest (Items 4–6), Sexual Arousal/Excitement (Items 7–9), and Sexual Orgasm/Ejaculation (Items 11–13). Scores at or below established cutoffs for each domain were considered indicative of dysfunction: Sexual Desire/Frequency ≤ 8.0 (range 2–10), Sexual Desire/Interest ≤ 11.0 (range 3–15), Sexual Pleasure ≤ 4.0 (range 1–5), Sexual Arousal/Excitement ≤ 13.0 (range 3–15), and Sexual Orgasm ≤ 13.0 (range 3–15).

Assessments were administered in English or Hindi according to each participant's literacy and language preference. As a formally validated Hindi version of the CSFQ-14 was not available, the interviewing clinician orally translated items where required, rather than administering a version developed through the WHO forward–backward translation and cultural-adaptation methodology; a formal translation and back-translation process was not undertaken because of time and resource constraints within the study period. This is discussed further as a limitation.

Statistical analysis

Data were analysed using IBM SPSS software (version 29.0; IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarise sociodemographic and clinical characteristics and to estimate the prevalence of overall and domain-wise sexual dysfunction. The Kolmogorov–Smirnov test indicated non-normal distribution of the continuous variables; associations of total and domain-wise CSFQ-14 scores with age, illness duration, and depression severity were therefore examined using Spearman's rank correlation. Correlation analysis was restricted to these three continuous variables, as gender and cohabitation status were fixed by the inclusion criteria, while the remaining categorical

sociodemographic variables (education, occupation, and socioeconomic status) showed limited variability across this clinical sample and were therefore summarised descriptively rather than correlated. A p-value < 0.05 was considered statistically significant.

Use of generative AI

Generative AI (Claude, ChatGPT) was used to assist with formatting this manuscript according to the journal's submission guidelines and with improving the organisation and language flow of the text. It was not used for study conceptualisation, data collection, data analysis, or interpretation of results. All scientific content was reviewed, verified, and approved by the authors, who take full responsibility for the accuracy and integrity of the manuscript.

Results

Sociodemographic and clinical characteristics of participants

In total, 94 participants were evaluated for the study. The mean age of the participants was 37.0 ± 7.7 years, with the majority belonging to the 31–45 years age group (59.57%). Most patients had higher secondary education (36.17%), were employed (78.72%), belonged to lower socio-economic status (48.94%), and resided in urban areas (57.45%). The mean duration of illness was 4.55 ± 2.1 months, with 53.19% having illness duration ≤ 4 months. Based on HAM-D scores (mean 18.6 ± 5.0), moderate depression was the most common severity (48.94%) (Table 1).

Table 1
Sociodemographic data and clinical parameters of the study participants (N = 94)

Parameter	Category	No. of Cases (N = 94)	Percentage (%)
Age Group (Mean 37.0 ± 7.7 years)	18–30 years	22	23.41%
	31–45 years	56	59.57%
	> 45 years	16	17.02%
Education	Primary	18	19.15%
	Secondary	30	31.91%
	Higher Secondary	34	36.17%
	Graduation	12	12.77%
Occupation	Employed	74	78.72%
	Unemployed	20	21.28%
Socio-economic status (SES)	Lower	46	48.94%
	Upper Lower	40	42.55%
	Lower Middle	8	8.51%
Residence	Urban	54	57.45%
	Rural	40	42.55%
Duration of illness (DOI) (Mean 4.55 ± 2.1 months)	≤ 4 months	50	53.19%
	> 4 months	44	46.81%
Severity of Depression (HAM-D) (Mean 18.6 ± 5.0)	Mild (8–16)	34	36.17%
	Moderate (17–23)	46	48.94%
	Severe (≥ 24)	14	14.89%

Prevalence and domain-wise distribution of sexual dysfunction

Sexual dysfunction was present in 54 participants (57.45%). Domain-wise, sexual desire/frequency, sexual desire/interest, sexual arousal/excitement, and orgasm dysfunction were each present in 66/94 participants (70.21%), and reduced pleasure in 62/94 participants (65.96%). Overall, sexual dysfunction was highly prevalent across all domains in the study population (Table 2).

Table 2
Prevalence and domain-wise distribution of sexual dysfunction among the study participants (N = 94)

Sexual Dysfunction (Cut-off: CSFQ score $\leq$ 47)	Present n (%)	Absent n (%)
Overall sexual dysfunction	54 (57.45%)	40 (42.55%)
Sexual Desire/Frequency ($\leq$ 8.0)	66 (70.21%)	28 (29.79%)
Sexual Desire/Interest ($\leq$ 11.0)	66 (70.21%)	28 (29.79%)
Sexual Pleasure ($\leq$ 4.0)	62 (65.96%)	32 (34.04%)
Sexual Arousal/Excitement ($\leq$ 13.0)	66 (70.21%)	28 (29.79%)
Sexual Orgasm ($\leq$ 13.0)	66 (70.21%)	28 (29.79%)

Correlation of overall sexual dysfunction

Duration of illness showed a strong and statistically significant negative correlation with sexual functioning ($\rho = -0.79$, $P < 0.001$), indicating worsening sexual function with longer illness duration. Depression severity (HAM-D score) also showed a moderate significant negative correlation ($\rho = -0.48$, $P < 0.001$), suggesting greater sexual dysfunction with increasing severity of depression. Age did not show a statistically significant correlation with sexual functioning ($\rho = -0.20$, $P = 0.053$) (Table 3).

Table 3
Correlation of sexual dysfunction (CSFQ scores) with age and clinical parameters among the study participants (N = 94)

Variable	Spearman's ρ	P value
Age (years)	-0.20	0.053
Duration of illness (months)	-0.79	< 0.001
Severity of Depression (HAM-D)	-0.48	< 0.001

Domain-wise correlates of sexual dysfunction

Spearman's rank correlation analysis revealed that duration of illness showed a strong and statistically significant negative correlation with all domains of sexual functioning ($\rho = -0.70$ to -0.82 ; $P < 0.001$), indicating worsening sexual function with longer illness duration. Depression severity (HAM-D score) also demonstrated significant negative correlations with sexual desire, interest, arousal, and orgasm ($P \leq 0.001$), though not with sexual pleasure. Age was not significantly associated with most domains, except for a weak correlation with sexual pleasure and orgasm ($P < 0.05$) (Table 4).

Table 4
Correlation of sexual functioning domains with age and clinical parameters among the study participants (N = 94)

Sexual Functioning Domain	Age (years) ρ (P value)	Duration of illness (months) ρ (P value)	Severity of Depression (HAM-D) ρ (P value)
Sexual Desire/Frequency	-0.17; P = 0.092	-0.80; P < 0.001	-0.41; P < 0.001
Sexual Desire/Interest	-0.19; P = 0.067	-0.70; P < 0.001	-0.53; P < 0.001
Sexual Pleasure	-0.31; P = 0.002	-0.73; P < 0.001	-0.09; P = 0.075
Sexual Arousal/Excitement	-0.20; P = 0.054	-0.79; P < 0.001	-0.49; P < 0.001
Sexual Orgasm	-0.23; P = 0.026	-0.82; P < 0.001	-0.42; P < 0.001

Discussion

Key findings

This cross-sectional study found that more than half of drug-naïve, first-episode male patients with depression (57.45%) had sexual dysfunction even before any antidepressant exposure, with broadly distributed impairment across the desire, arousal, orgasm, and pleasure domains (65.96%–70.21%). Illness duration and depression severity, but not age, emerged as significant correlates of poorer sexual functioning.

Comparison with existing literature

The prevalence observed in this study is consistent with previous research in unmedicated or newly diagnosed cohorts. The ELIXIR study⁹ reported sexual dysfunction in 69% of patients when actively assessed through structured physician questioning, underscoring that structured enquiry substantially increases detection compared with spontaneous reporting. Similarly, Sakhare et al.¹⁸ reported sexual dysfunction in 79% of newly diagnosed depressed males, and Maru et al.¹⁹ reported a comparable burden of approximately 78% among males with major depressive disorder. The broad domain-wise distribution observed here, with deficits consistently affecting desire, arousal, and orgasm, mirrors the pattern reported by Sakhare et al.¹⁸, and supports the concept that depression disrupts sexual response through multiple, overlapping mechanisms including anhedonia, impaired reward processing, and neurobiological changes involving serotonin–dopamine imbalance and stress-axis dysregulation³.

The strong association between illness duration and sexual dysfunction observed in this study is in keeping with Ghosh et al.²⁰ and Tarwani et al.²¹, who similarly reported that sexual dysfunction

worsened with increasing severity and duration of depressive symptoms, particularly in the desire and arousal domains. Our findings also support the broader observations of Kennedy et al.¹¹ and Thakurdesai and Sawant¹⁰, who emphasised that sexual dysfunction is present even before treatment and is closely linked to depressive psychopathology rather than being solely medication-induced. In contrast, age was not significantly associated with overall sexual function in our study, in keeping with Thakurdesai and Sawant¹⁰, although studies in general (non-depressed) populations have reported age-related decline in sexual function; this suggests that illness-related factors may play a more dominant role than age in this specific clinical population.

Influence of depression on the timing and origin of sexual dysfunction

An important clinical question, and one this study can only partially address, is whether the sexual dysfunction observed reflects a consequence of the depressive illness itself or a pre-existing condition that was simply unmasked at presentation. Structured inquiry into the temporal relationship between the onset of sexual dysfunction and the onset of depressive symptoms was not undertaken in this study, and premorbid sexual functioning was not formally assessed. This is a notable gap, since even limited structured probing has been informative in other studies: Jani et al.⁶ found that in nearly half of affected men, sexual dysfunction preceded the start of antidepressant treatment, and Kennedy et al.¹¹ documented substantial impairment in desire even before pharmacotherapy was initiated. Because our design captured sexual functioning only at a single, pre-treatment time point, without reference to a premorbid baseline, we cannot determine whether dysfunction developed concurrently with, or prior to, the depressive episode. Given that illness duration was the strongest correlate identified in this study, and that a substantial proportion of participants (46.81%) had an illness duration exceeding four months at the time of assessment, it is plausible that at least part of the dysfunction observed reflects a cumulative, illness-related process rather than a fixed baseline state; however, this cannot be confirmed without longitudinal follow-up or structured premorbid sexual history.

Strengths

This study's principal strength lies in its focus on drug-naïve patients with first-episode depression, which minimised the confounding effects of antidepressant-induced sexual dysfunction and illness chronicity, allowing a clearer assessment of illness-related sexual impairment at the earliest clinically identifiable stage. The use of standardised and validated instruments (HAM-D and CSFQ-14), together with domain-wise evaluation, enabled detailed characterisation of sexual dysfunction across different phases of the sexual response cycle.

Limitations

This study has several limitations. The final sample size (94) fell marginally short of the calculated requirement (95), which may have modestly reduced statistical power for weaker associations. The study was conducted at a single tertiary care centre in a clinical outpatient setting, limiting

generalisability to community-based populations, and its cross-sectional design precludes causal inference. Only male patients were included, limiting applicability to women with depressive disorders. Psychosocial and relational factors that can influence sexual functioning, such as partner-related variables and marital satisfaction, were not assessed and may have contributed to unmeasured confounding. Sociodemographic variables (education, occupation, socioeconomic status, residence) were described descriptively but not statistically tested against sexual dysfunction. A formally validated Hindi version of the CSFQ-14 was not available; the interviewing clinician orally translated items where required rather than using an instrument developed through a systematic WHO forward–backward translation and cultural-adaptation process, which may have introduced measurement variability. The study did not include a comparison group of non-depressed individuals or antidepressant-treated patients, limiting inferences about the specificity of this association. Finally, structured assessment of premorbid sexual functioning was not undertaken, so the possibility that some of the observed dysfunction was pre-existing rather than illness-related cannot be excluded.

Implications

These findings support routine assessment of sexual functioning at baseline, before antidepressant initiation, to help clinicians differentiate depressive-illness-related sexual dysfunction from antidepressant-induced dysfunction that may emerge later in treatment. Early identification may also improve treatment adherence and patient satisfaction, since sexual adverse effects are a recognised reason for poor compliance in depressive disorders.

Future directions

Future research should prioritise longitudinal designs incorporating structured premorbid sexual history to clarify the temporal relationship between depression onset and sexual dysfunction, development of a validated Hindi (or other regional-language) CSFQ-14 following WHO translation methodology, inclusion of comparison groups (non-depressed and antidepressant-treated patients), and extension of this work to female patients and multicentric samples.

Conclusion

The present study demonstrates that sexual dysfunction is highly prevalent in drug-naïve male patients with first-episode depression, affecting more than half of participants and involving multiple domains of sexual functioning, including desire, arousal, orgasm, and pleasure. While age was not significantly associated with overall sexual function, illness duration showed a strong negative correlation across all domains, and depression severity showed significant associations with key domains such as desire, arousal, and orgasm. These findings indicate that sexual dysfunction in early depression is driven primarily by illness-related factors (duration and severity) rather than by age, though the role of other sociodemographic factors and the precise temporal relationship with depression onset were not formally tested in this study. The results support early identification and routine assessment of sexual

functioning at baseline, even before treatment initiation, to improve comprehensive management and patient outcomes.

Declarations

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Author Contribution Statement

Naresh Kumar: conceptualization, methodology, data collection, formal analysis, writing – original draft. Ankur Sachdeva: conceptualization, supervision, writing – review and editing. Manoj Kumar: supervision, writing – review and editing. Sunil Goyal: methodology, writing – review and editing. All authors read and approved the final manuscript.

Ethical Approval

This study was approved by the Institutional Ethics Committee (IEC letter no. 134 X/11/13/2023-IEC/DHR/21, dated 10th June 2023) and all procedures were performed in accordance with the ethical standards of the responsible institutional committee and the 1964 Declaration of Helsinki and its later amendments. Written informed consent to participate was obtained from all individual participants included in the study.

Competing Interests

The authors declare no competing interests with respect to the research, authorship, and/or publication of this article.

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Data Availability Statement

The dataset generated and/or analysed during the current study is available from the corresponding author on reasonable request.

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Figures

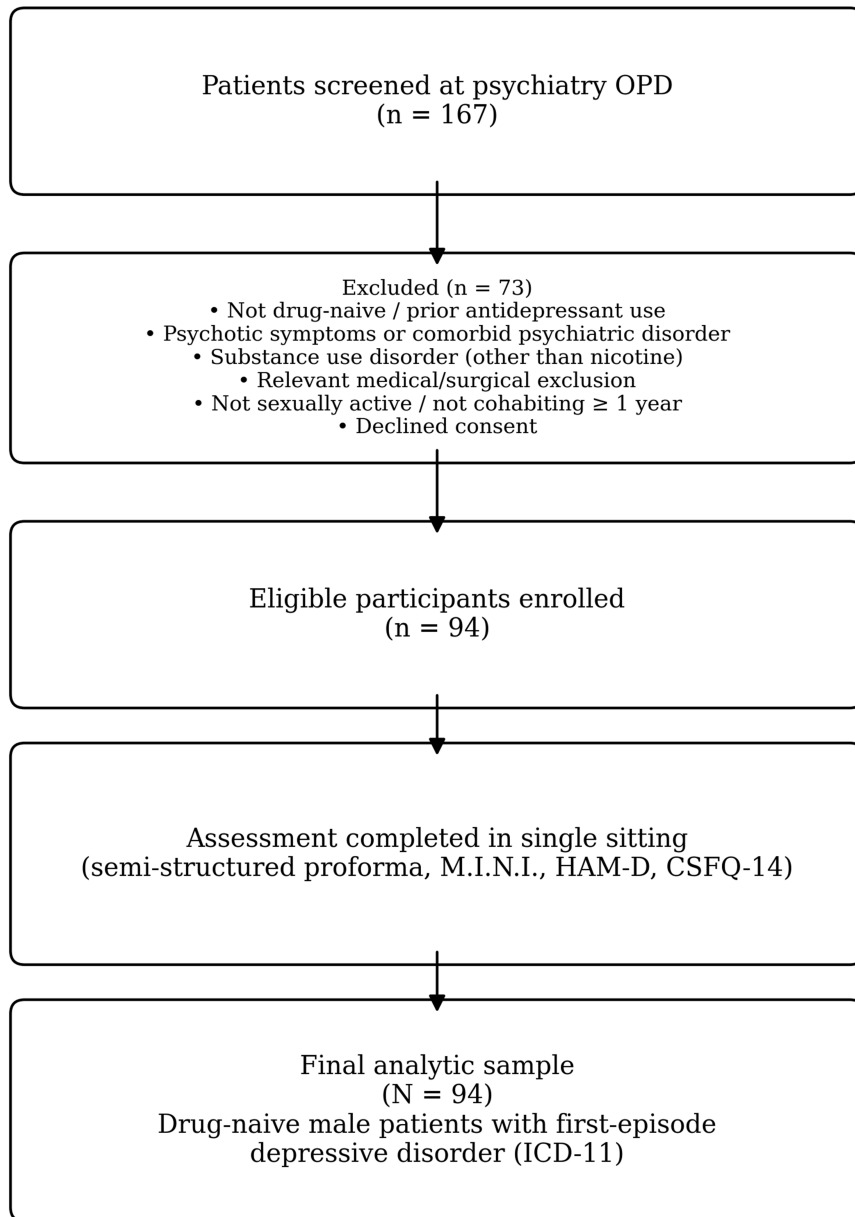


Figure 1

Flowchart of screening, recruitment, and assessment of study participants.

Figure 1 (flowchart of screening, recruitment, and assessment of study participants) to be inserted here as a separate high-resolution file per journal artwork guidelines.

Supplementary Files

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