



## ANXIETY AND DEPRESSION IN ERECTILE DYSFUNCTION AND PREMATURE EJACULATION CASES IN A TERTIARY HEALTH CENTRE: A CROSS-SECTIONAL STUDY

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### ABSTRACT

**Background:** Erectile dysfunction (ED) and premature ejaculation (PME) significantly impact quality of life and are closely associated with anxiety and depression. The psychological aspects of these conditions often remain underexplored, particularly in the Indian population.

**Objectives:** To assess the prevalence and severity of anxiety and depression in individuals with ED and PME, and to explore the relationship between the severity of sexual dysfunction and psychiatric symptoms.

**Methods:** This hospital-based cross-sectional study included 91 male patients presenting with ED and/or PME to the Psychiatry outpatient department of Rajshree Medical Research Institute, Bareilly. Patients were assessed using the International Index of Erectile Function (IIEF), Premature Ejaculation Diagnostic Tool (PEDT), Hamilton Anxiety Rating Scale (HAM-A), and Hamilton Depression Rating Scale (HDRS). Descriptive statistics, correlation analysis, and regression analysis were performed using R statistical software.

**Results:** Of 91 patients (mean age:  $35.4 \pm 9.2$  years), ED only was present in 53.8%, PME only in 5.5%, and both conditions in 40.7%. Anxiety was detected in 90.1% of patients while depression was found in 86.8%. Severe anxiety was present in 63.7% and severe/very severe depression in 80.3% of patients. Significant negative correlations were observed between IIEF scores and HAM-A scores ( $r = -0.698$ ,  $p < 0.001$ ) and HDRS scores ( $r = -0.640$ ,  $p < 0.001$ ). Multiple regression analysis revealed that IIEF score was a significant predictor of both anxiety ( $p = 0.034$ ) and depression ( $p = 0.004$ ).

**Conclusion:** This study demonstrates a very high prevalence of anxiety (90.1%) and depression (86.8%) among patients with erectile dysfunction and premature ejaculation. The significant inverse correlation between ED severity and psychiatric symptoms underscores the importance of routine psychiatric screening and integrated treatment approaches for these patients.

**Keywords:** Anxiety, Depression, Erectile dysfunction, Premature ejaculation, Sexual dysfunction, HAM-A, HDRS

## INTRODUCTION

Sexual health is acknowledged by leading health organizations as a fundamental human right and an essential aspect of overall well-being. The World Health Organisation recognises sexual health as a state of physical, emotional, mental, and social well-being in relation to sexuality, extending beyond merely the absence of disease, dysfunction. Sexual dysfunction encompasses a heterogeneous group of disorders that significantly impact quality of life, interpersonal relationships, and psychological health. Among the most prevalent male sexual dysfunctions are erectile dysfunction (ED) and premature ejaculation (PME), both of which carry substantial personal and social burden.

Erectile dysfunction is defined as the persistent or recurrent inability to achieve and maintain a penile erection sufficient for satisfactory sexual performance. The global prevalence of ED has been estimated to affect approximately 150 million men worldwide, with projections suggesting this number could reach 322 million by 2025. The prevalence varies considerably across populations, ranging from 3% to 76.5% depending on age, geographic region, and assessment methodology employed. Recent epidemiological studies have reported that a significant proportion of ED patients exhibit symptoms of anxiety and depression, with some studies reporting anxiety prevalence as high as 79.8% and depression prevalence of 64.9%.

Premature ejaculation is characterised by ejaculation that consistently occurs sooner than desired, either before or shortly after vaginal penetration, causing significant distress to one or both partners. The International Society for Sexual Medicine defines lifelong PME as ejaculation occurring within one minute of vaginal penetration from the first sexual experience, while acquired PME involves a clinically significant reduction in latency time. Prevalence studies using standardised methods generally report rates between 5% and 30%, making it one of the most common male sexual complaints.

The etiology of both ED and PME involves complex interactions between psychological, neurological, vascular, hormonal, and social factors. While organic causes including cardiovascular disease, diabetes mellitus, hypertension, and hormonal imbalances contribute significantly to ED pathophysiology, psychological factors such as anxiety, depression, and stress play equally important roles. The bidirectional relationship between sexual dysfunction and mental health disorders has been increasingly recognised, with studies demonstrating that depression increases the risk of ED while ED independently elevates the risk of subsequent depression. A meta-analysis revealed that men with ED had a three-fold increased risk of developing depression compared to those without ED.

In the Indian context, sexual dysfunction presents unique challenges due to sociocultural stigma and reluctance to discuss sexual health concerns openly. Studies from Indian tertiary care centres have reported that premature ejaculation and depression are common comorbidities among men presenting with ED. The intersection of sexual ED and PME with anxiety and depression underscores the importance of comprehensive assessment and integrated treatment approaches. Performance anxiety represents a critical psychological factor in sexual dysfunction, creating a self-perpetuating cycle where fear of failure leads to increased anxiety, which further impairs sexual function.

The rationale for this study stems from the recognition that despite the high prevalence of ED and PME, the psychological comorbidities remain under-explored, particularly in the Indian population. Previous studies have reported anxiety prevalence of 38.16% and depression prevalence of 64.97% among ED patients. Understanding the psychiatric profiles of these patients is essential for developing comprehensive treatment strategies that address both physical symptoms and psychological distress. The aim of this study was to assess the prevalence and pattern of anxiety and depression among patients presenting with erectile dysfunction and premature ejaculation at a tertiary health care centre.

## MATERIALS AND METHODS

### Study Design and Setting

This hospital-based cross-sectional observational study was conducted at the Department of Psychiatry, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India. The study was conducted over a period of one year after obtaining ethical approval from the Institutional Ethics Committee.

### Study Population

The study population comprised adult male patients presenting with erectile dysfunction and/or premature ejaculation to the Psychiatry outpatient department. Purposive consecutive sampling method was employed. The inclusion criteria were: (1) clinically confirmed diagnosis of ED or PME, (2) aged 18 years and older, and (3) primary naïve patients. The exclusion criteria were: (1) patients below 18 years of age, (2) those with recent surgeries or medical interventions affecting sexual function, and (3) those with severe comorbid medical conditions unrelated to psychiatric or sexual health were excluded.

### Sample Size Calculation

The sample size was calculated using the single population proportion formula:  $n = z^2 \times p(1-p) / e^2$ , where  $z = 1.96$  (standard normal deviate at 95% confidence level),  $p = 38.7\%$  (prevalence of anxiety in ED patients based on previous literature), and  $e = 10\%$  (margin of error). The calculated minimum required sample size was 91 participants.

### Study Tools

The following validated instruments were utilized:

1. International Index of Erectile Function (IIEF): A 15-item self-report questionnaire to assess erectile dysfunction severity. The erectile function domain (questions 1-5 and 15) was used for ED classification: severe (5-7), moderate (8-11), mild-moderate (12-16), mild (17-21), and no dysfunction (22-25).
2. Premature Ejaculation Diagnostic Tool (PEDT): A 5-item validated tool to evaluate presence and severity of premature ejaculation. Scores  $\geq 11$  indicate PME present, 9-10 indicate probable PME, and  $< 9$  indicate no PME.
3. Hamilton Anxiety Rating Scale (HAM-A): A 14-item clinician-administered scale for assessing anxiety severity. Scores were categorized as: no anxiety ( $< 8$ ), mild (8-17), moderate (18-24), and severe ( $\geq 25$ ).
4. Hamilton Depression Rating Scale (HDRS): A 17-item clinician-rated scale for evaluating depression severity. Scores were categorized as: no depression (0-7), mild (8-13), moderate (14-18), severe (19-22), and very severe ( $\geq 23$ ).

Laboratory investigations, including serum testosterone, lipid profile, and fasting blood sugar were obtained where clinically indicated.

### Data Collection Procedure

All consecutive male patients presenting with complaints suggestive of ED and/or PME were screened for eligibility. Written informed consent was obtained from all participants. A detailed clinical interview was conducted to establish diagnoses using ICD-10 criteria. Complete medical, psychiatric, and sexual history was recorded. Standardized questionnaires were administered by trained investigators in a private setting to ensure patient comfort and honest responses. Demographic data including age, education, occupation, marital status, residence, and relevant clinical history were recorded.

### Statistical Analysis

Statistical analysis was performed using R Statistical Software (R Foundation for Statistical Computing, Vienna, Austria). Continuous variables were expressed as mean  $\pm$  standard deviation. Categorical variables were expressed as frequencies and percentages. Pearson correlation

coefficients were calculated to explore relationships between sexual dysfunction severity and psychiatric symptom scores. Multiple logistic regression was used to identify predictors of anxiety and depression. Chi-square test was used for comparing categorical variables between groups. A p-value < 0.05 was considered statistically significant.

## RESULTS

### Sociodemographic Characteristics

A total of 91 patients presenting with sexual dysfunction were enrolled in the study. The sociodemographic characteristics are summarized in Table 1. The mean age was  $35.4 \pm 9.2$  years with a range of 18-56 years. The majority of patients were in the 26-35 years age group (37.4%). Nearly half were married (48.4%) while 44.0% were unmarried. Most patients had graduate or higher education (47.3%) and were employed in private jobs (28.6%). Urban residence was most common (41.8%).

**Table 1: Sociodemographic Characteristics of Study Population (n=91)**

| Variable                                     | n              | %    |
|----------------------------------------------|----------------|------|
| <b>Age (years), Mean <math>\pm</math> SD</b> | 35.4 $\pm$ 9.2 | -    |
| <b>Age Groups</b>                            |                |      |
| 18-25 years                                  | 14             | 15.4 |
| 26-35 years                                  | 34             | 37.4 |
| 36-45 years                                  | 28             | 30.8 |
| 46-55 years                                  | 14             | 15.4 |
| 56-65 years                                  | 1              | 1.1  |
| <b>Marital Status</b>                        |                |      |
| Married                                      | 44             | 48.4 |
| Unmarried                                    | 40             | 44.0 |
| Divorced/Separated                           | 5              | 5.5  |
| Widower                                      | 1              | 1.1  |
| <b>Education</b>                             |                |      |
| Illiterate                                   | 4              | 4.4  |
| Primary                                      | 6              | 6.6  |
| Secondary                                    | 15             | 16.5 |
| Higher Secondary                             | 23             | 25.3 |
| Graduate                                     | 31             | 34.1 |
| Post Graduate                                | 12             | 13.2 |
| <b>Residence</b>                             |                |      |
| Urban                                        | 38             | 41.8 |
| Rural                                        | 31             | 34.1 |
| Semi-urban                                   | 22             | 24.2 |
| <b>Occupation</b>                            |                |      |
| Private Job                                  | 26             | 28.6 |
| Business                                     | 17             | 18.7 |
| Unemployed                                   | 12             | 13.2 |
| Farmer                                       | 11             | 12.1 |
| Government Job                               | 9              | 9.9  |
| Laborer                                      | 8              | 8.8  |
| Retired                                      | 5              | 5.5  |
| Student                                      | 3              | 3.3  |

### Clinical Profile

The clinical characteristics are presented in Table 2. The mean duration of sexual dysfunction was  $18.1 \pm 10.6$  months. Erectile dysfunction alone was the most common presentation (53.8%), followed by both ED and PME (40.7%), and PME alone (5.5%). Only 17.6% had received previous treatment. Regarding comorbidities, tobacco use was present in 41.8%, alcohol use in 24.2%, diabetes mellitus in 33.0%, and hypertension in 11.0%.

**Table 2: Clinical Profile of Study Population (n=91)**

| Variable                                           | n               | %    |
|----------------------------------------------------|-----------------|------|
| <b>Duration (months), Mean <math>\pm</math> SD</b> | 18.1 $\pm$ 10.6 | -    |
| <b>Diagnosis Type</b>                              |                 |      |
| ED only                                            | 49              | 53.8 |
| Both ED and PME                                    | 37              | 40.7 |
| PME only                                           | 5               | 5.5  |
| <b>Previous Treatment</b>                          |                 |      |
| Yes                                                | 16              | 17.6 |
| No                                                 | 75              | 82.4 |
| <b>Comorbidities</b>                               |                 |      |
| Tobacco Use                                        | 38              | 41.8 |
| Alcohol Use                                        | 22              | 24.2 |
| Diabetes Mellitus                                  | 30              | 33.0 |
| Hypertension                                       | 10              | 11.0 |
| <b>Testosterone Status</b>                         |                 |      |
| Normal                                             | 74              | 81.3 |
| Low                                                | 17              | 18.7 |

### Severity of Sexual Dysfunction

The severity distribution of sexual dysfunction is shown in Table 3. The mean IIEF score was  $10.24 \pm 5.63$ , indicating moderate-severe erectile dysfunction on average. The majority had severe ED (72.5%), followed by moderate (12.1%), mild (7.7%), mild-moderate (5.5%), and no ED (2.2%). For PME, the mean PEDT score was  $9.69 \pm 4.89$ . PME was present in 46.2%, probable PME in 12.1%, and no PME in 41.8%.

**Table 3: Severity of Sexual Dysfunction (n=91)**

| Variable                                    | n                | %    |
|---------------------------------------------|------------------|------|
| <b>IIEF Score, Mean <math>\pm</math> SD</b> | 10.24 $\pm$ 5.63 | -    |
| <b>ED Severity (IIEF)</b>                   |                  |      |
| Severe (5-7)                                | 66               | 72.5 |
| Moderate (8-11)                             | 11               | 12.1 |
| Mild-Moderate (12-16)                       | 5                | 5.5  |
| Mild (17-21)                                | 7                | 7.7  |
| No ED (22-25)                               | 2                | 2.2  |
| <b>PEDT Score, Mean <math>\pm</math> SD</b> | 9.69 $\pm$ 4.89  | -    |
| <b>PME Status (PEDT)</b>                    |                  |      |
| PME Present ( $\geq 11$ )                   | 42               | 46.2 |
| Probable PME (9-10)                         | 11               | 12.1 |
| No PME ( $< 9$ )                            | 38               | 41.8 |

### Prevalence and Severity of Anxiety and Depression

The prevalence and severity of psychiatric symptoms are presented in Table 4. Anxiety was present in 82 patients (90.1%), while depression was present in 79 patients (86.8%). The mean HAM-A score was  $23.57 \pm 9.04$  (range: 2-41), and the mean HDRS score was  $20.09 \pm 7.61$  (range: 0-28). Regarding severity, severe anxiety was most common (63.7%), followed by moderate (14.3%) and

mild (12.1%). For depression, very severe depression was most prevalent (46.2%), followed by severe (34.1%), mild (5.5%), and moderate (1.1%).

**Table 4: Prevalence and Severity of Anxiety and Depression (n=91)**

| Variable                                     | n                | %    |
|----------------------------------------------|------------------|------|
| <b>HAM-A Score, Mean <math>\pm</math> SD</b> | 23.57 $\pm$ 9.04 | -    |
| <b>Anxiety Prevalence</b>                    | 82               | 90.1 |
| <b>Anxiety Severity</b>                      |                  |      |
| No Anxiety (<8)                              | 9                | 9.9  |
| Mild (8-17)                                  | 11               | 12.1 |
| Moderate (18-24)                             | 13               | 14.3 |
| Severe ( $\geq$ 25)                          | 58               | 63.7 |
| <b>HDRS Score, Mean <math>\pm</math> SD</b>  | 20.09 $\pm$ 7.61 | -    |
| <b>Depression Prevalence</b>                 | 79               | 86.8 |
| <b>Depression Severity</b>                   |                  |      |
| No Depression (0-7)                          | 12               | 13.2 |
| Mild (8-13)                                  | 5                | 5.5  |
| Moderate (14-18)                             | 1                | 1.1  |
| Severe (19-22)                               | 31               | 34.1 |
| Very Severe ( $\geq$ 23)                     | 42               | 46.2 |

### Comparison of Psychiatric Symptoms by Diagnosis Type

Table 5 shows the comparison of psychiatric symptom scores across diagnosis types. Patients with both ED and PME had the highest mean HAM-A score (26.57  $\pm$  5.82) and HDRS score (22.68  $\pm$  4.15), followed by patients with ED only (HAM-A: 22.96  $\pm$  9.59; HDRS: 19.61  $\pm$  8.16). Patients with PME only had the lowest scores (HAM-A: 7.40  $\pm$  3.91; HDRS: 5.60  $\pm$  4.72).

**Table 5: Psychiatric Symptoms by Diagnosis Type**

| Diagnosis       | HAM-A (Mean $\pm$ SD) | HDRS (Mean $\pm$ SD) | n  |
|-----------------|-----------------------|----------------------|----|
| ED only         | 22.96 $\pm$ 9.59      | 19.61 $\pm$ 8.16     | 49 |
| Both ED and PME | 26.57 $\pm$ 5.82      | 22.68 $\pm$ 4.15     | 37 |
| PME only        | 7.40 $\pm$ 3.91       | 5.60 $\pm$ 4.72      | 5  |

### Correlation Analysis

Correlation analysis revealed significant relationships between sexual dysfunction severity and psychiatric symptoms (Table 6). IIEF score showed significant negative correlations with HAM-A score ( $r = -0.698$ ,  $p < 0.001$ ) and HDRS score ( $r = -0.640$ ,  $p < 0.001$ ), indicating that more severe erectile dysfunction was associated with higher anxiety and depression. PEDT score did not show significant correlations with psychiatric symptoms. HAM-A and HDRS scores were strongly positively correlated ( $r = 0.844$ ,  $p < 0.001$ ).

**Table 6: Correlation Matrix**

| Variable           | IIEF Score | HAM-A Score | HDRS Score |
|--------------------|------------|-------------|------------|
| <b>IIEF Score</b>  | 1.000      | -0.698***   | -0.640***  |
| <b>PEDT Score</b>  | 0.025      | 0.015       | 0.047      |
| <b>HAM-A Score</b> | -0.698***  | 1.000       | 0.844***   |
| <b>HDRS Score</b>  | -0.640***  | 0.844***    | 1.000      |

\*\*\* $p < 0.001$

### Predictors of Anxiety and Depression

Multiple logistic regression analysis was performed to identify predictors of anxiety and depression (Table 7). IIEF score emerged as a significant predictor of both anxiety (OR = 0.87,  $p = 0.034$ ) and depression (OR = 0.83,  $p = 0.004$ ). Age, duration of symptoms, and diabetes were not significant predictors in the multivariate model.

**Table 7: Predictors of Anxiety and Depression (Logistic Regression)**

| Variable                        | $\beta$ Coefficient | SE    | p-value |
|---------------------------------|---------------------|-------|---------|
| <b>Predictors of Anxiety</b>    |                     |       |         |
| IIEF Score                      | -0.145              | 0.068 | 0.034*  |
| Age                             | 0.009               | 0.047 | 0.855   |
| Duration (months)               | 0.002               | 0.043 | 0.955   |
| <b>Predictors of Depression</b> |                     |       |         |
| IIEF Score                      | -0.186              | 0.065 | 0.004** |
| Age                             | 0.028               | 0.044 | 0.527   |
| Duration (months)               | 0.075               | 0.056 | 0.184   |

\* $p < 0.05$ , \*\* $p < 0.01$

## DISCUSSION

This study demonstrates a very high prevalence of anxiety (90.1%) and depression (86.8%) among patients presenting with erectile dysfunction and premature ejaculation at a tertiary health care centre. These findings significantly exceed previously reported prevalence rates in similar populations and underscore the critical importance of psychiatric assessment in patients with sexual dysfunction.

The demographic profile of our study population showed a mean age of 35.4 years, which is younger than the typical age reported in many ED studies. This finding aligns with emerging evidence that ED is increasingly affecting younger men and has significant psychological impact across all age groups. The predominance of the 26-35 year age group (37.4%) in our sample suggests that sexual dysfunction in younger adults may be more strongly associated with psychological factors than organic causes.

The prevalence of anxiety (90.1%) in our study is substantially higher than the 38.16% reported by Xiao et al. (2023) and comparable to the 79.82% reported by Yang et al. (2019) in Chinese populations. Similarly, our depression prevalence (86.8%) exceeds the 64.97% reported by Xiao et al. The higher prevalence in our study may be attributed to several factors: (1) our study population comprised patients presenting to a psychiatry department, suggesting greater psychiatric morbidity at baseline; (2) the use of clinician-administered scales (HAM-A and HDRS) may have captured more subtle symptoms compared to self-report measures; and (3) cultural factors and stigma associated with sexual dysfunction in the Indian context may contribute to greater psychological distress.

The severity distribution of psychiatric symptoms is particularly concerning. Severe anxiety was present in 63.7% and severe to very severe depression in 80.3% of patients. These findings indicate that most patients with sexual dysfunction experience not just mild psychological distress but clinically significant psychiatric symptoms that warrant active intervention. The high proportion of very severe depression (46.2%) is especially notable and suggests that depression screening should be a mandatory component of evaluation for all patients presenting with sexual dysfunction.

The significant negative correlations between IIEF scores and both HAM-A ( $r = -0.698$ ) and HDRS ( $r = -0.640$ ) scores indicate that erectile dysfunction severity is strongly associated with anxiety and depression severity. This finding is consistent with the cognitive interference model proposed by Barlow, which suggests that performance anxiety creates a self-perpetuating cycle where fear of failure leads to increased sympathetic activation and subsequent erectile impairment. The strong correlation ( $r = 0.844$ ) between anxiety and depression scores further supports the concept of shared psychopathological mechanisms underlying these conditions in sexual dysfunction.

Interestingly, PEDT scores did not show significant correlations with anxiety and depression, suggesting that the relationship between PME and psychiatric morbidity may differ from that of ED. This finding may reflect different pathophysiological mechanisms, with PME being more strongly linked to serotonergic dysfunction and ED having stronger associations with performance anxiety and depression. However, patients with both ED and PME showed the highest psychiatric symptom scores, indicating an additive effect of multiple sexual dysfunctions on psychological well-being.

The regression analysis identified IIEF score as the only significant predictor of both anxiety ( $p = 0.034$ ) and depression ( $p = 0.004$ ) in the multivariate model. This finding emphasizes that ED severity is the primary driver of psychiatric comorbidity, independent of age, duration of symptoms, or medical comorbidities. The clinical implication is that effective treatment of ED may lead to improvement in psychiatric symptoms, supporting the bidirectional relationship between these conditions.

The high prevalence of comorbidities in our study population, including diabetes mellitus (33.0%), tobacco use (41.8%), and hypertension (11.0%), reflects the known association between ED and cardiometabolic risk factors. These findings support the concept of ED as a sentinel marker for cardiovascular disease and emphasize the need for comprehensive medical evaluation in these patients.

### **Clinical Implications**

Our findings have several important clinical implications. First, the extremely high prevalence of anxiety and depression emphasizes the need for routine psychiatric screening in all patients presenting with sexual dysfunction. Second, the severity of psychiatric symptoms suggests that many patients will require active psychiatric intervention alongside treatment for sexual dysfunction. Third, the strong correlation between ED severity and psychiatric symptoms supports an integrated treatment approach that addresses both conditions simultaneously. Fourth, the high prevalence of severe depression underscores the need for suicide risk assessment in this population.

### **Strengths and Limitations**

The strengths of this study include the use of validated standardized assessment tools, comprehensive evaluation of both anxiety and depression using clinician-administered scales, and systematic characterization of psychiatric symptom severity. The inclusion of multiple regression analysis allowed identification of independent predictors of psychiatric morbidity.

Limitations include the cross-sectional design, which precludes determination of causal relationships. The study population was drawn from a psychiatry department, which may have selected for patients with greater psychiatric comorbidity and may not be generalizable to primary care settings. The single-centre design limits external validity. Future prospective studies with larger sample sizes and comparison groups would be valuable to establish temporal relationships and evaluate treatment outcomes.

### **CONCLUSION**

This study demonstrates an extremely high prevalence of anxiety (90.1%) and depression (86.8%) among patients with erectile dysfunction and premature ejaculation presenting to a tertiary health care centre. The majority of patients had severe psychiatric symptoms, with 63.7% showing severe anxiety and 80.3% showing severe to very severe depression. Significant inverse correlations between ED severity (IIEF scores) and psychiatric symptoms (HAM-A and HDRS scores) highlight the strong association between sexual dysfunction and mental health. IIEF score was identified as an independent predictor of both anxiety and depression. These findings underscore the critical importance of routine psychiatric screening and integrated treatment approaches for patients with sexual dysfunction. Healthcare providers should maintain a high index of suspicion for psychiatric comorbidity and consider psychiatric evaluation as a routine component of management for all patients presenting with ED and PME.

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## Competing Interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

## Author Contributions

Dr. Karan Tomar: Conceptualization, data collection, statistical analysis, manuscript preparation.  
Dr. Rakesh Yaduvanshi: Study supervision, critical review, and manuscript revision.

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## Ethical Approval

Ethical approval for this study was obtained from the Institutional Ethics Committee of Rajshree Medical Research Institute, Bareilly.

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