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Effect of Diagnostic Delay on Life Satisfaction, Anxiety, and Depression in Indian Women with Endometriosis

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Abstract: This study investigates the impact of diagnostic delay on life satisfaction, anxiety, and depression among 50 Indian women with endometriosis. Using a cross-sectional survey design, data were collected via purposive and snowball sampling from women aged 18–45. Diagnostic delay was categorized into four groups (< 1, 1–3, 4–6, > 6 years). Life satisfaction was assessed with the Satisfaction with Life Scale (SWLS), and anxiety and depression with the Hospital Anxiety and Depression Scale (HADS). Spearman's correlations revealed no significant associations between diagnostic delay and life satisfaction (r_s = −.037, p = .799) anxiety (r_s = .019, p = .893), or depression (r_s = −.075, p = .604). Multiple regression analyses showed that diagnostic delay did not predict these outcomes (R^2 ≤.050, p ≥.497). Significant correlations among outcomes (r_s = .629 for anxiety-depression, r_s = −.435 for anxiety-life satisfaction, r_s = −.384 for depression-life satisfaction, p < .006) suggest psychological distress impacts the quality of life. Findings indicate cultural resilience, or methodological limitations may attenuate delay effects in India's urban context. The study underscores the need for psychological interventions and improved diagnostic infrastructure to support India's 2023 Women's Health Policy.

Keywords: *Endometriosis, Diagnostic Delay, Life Satisfaction, Anxiety, Depression, Indian Women*

Vol. 3, Issue 5 May 2025 ISSN: 2584-0142

1. Introduction

Endometriosis, a chronic gynecological condition affecting 10% of reproductive-age women globally, involves endometrial-like tissue outside the uterus, leading to severe pelvic pain, infertility, and reduced quality of life (Giudice, 2010; World Health Organization: WHO & World Health Organization: WHO, 2023). In India, diagnostic delays averaging 6–10 years are driven by cultural stigmas around menstrual health and limited gynecological care, particularly in rural areas (Sharma & Mishra, 2024). Global studies link prolonged diagnostic delays to increased anxiety, depression, and lower life satisfaction (Culley et al., 2013), but India's collectivist culture and healthcare disparities necessitate culturally specific research (Mehta & Kapoor, 2024).

This study examines whether diagnostic delay impacts life satisfaction, anxiety, and depression among Indian women with endometriosis. Grounded in the biopsychosocial model (Engel,1977), stress and coping theory (Lazarus & Folkman, 1984), and self-determination theory (Deci & Ryan, 1985), it hypothesizes that delays exacerbate distress by intensifying pain, depleting coping resources, and undermining autonomy, competence, and relatedness. India's healthcare challenges, including low expenditure (2.1% of GDP) and rural access barriers (Economic Survey, 2024), amplify these effects. Urban advocacy via platforms like #EndoWarriors highlights demand for timely diagnosis (Social Media Analytics, 2025). The study addresses gaps in Indian-focused research, using validated scales (SWLS, HADS) to inform the 2023 Women's Health Policy (Women's Health Policy, 2023).

1.1 *Purpose*

To investigate the impact of diagnostic delay on life satisfaction, anxiety, and depression among Indian women with endometriosis.

1.2 *Objectives*

- To examine the relationship between diagnostic delay and life satisfaction.
- To examine the relationship between diagnostic delay and anxiety.
- To examine the relationship between diagnostic delay and depression.
- To assess the predictive effect of diagnostic delay on life satisfaction, anxiety, and depression.

1.3 *Hypotheses*

- **H1:** Significant negative relationship between diagnostic delay and life satisfaction.
- **H2:** Significant positive relationship between diagnostic delay and anxiety.
- **H3:** Significant positive relationship between diagnostic delay and depression.

Vol. 3, Issue 5 May 2025 ISSN: 2584-0142

- **H4:** Diagnostic delay significantly predicts life satisfaction, anxiety, and depression.

2. Methodology

2.1 *Research Design*

A quantitative, cross-sectional, correlational design was used to examine relationships and predictive effects.

2.2 *Sample*

The sample comprised 50 women aged 18–45 with a formal endometriosis diagnosis, recruited via purposive and snowball sampling from urban and semi-urban gynecological clinics, support groups, and social media. Inclusion criteria included the ability to recall symptom onset and diagnosis dates; exclusion criteria included age < 18 or > 45, no formal diagnosis, or incomplete data. Power analysis suggested $N \geq 50$ for detecting moderate correlations ($r \approx .40$, 80% power, $\alpha = .05$) (Cohen, 1988).

2.3 *Measures*

- ***Diagnostic Delay:*** Self-reported duration between symptom onset and diagnosis, categorized as < 1, 1–3, 4–6, > 6 years, verified with medical records were available.
- ***Life Satisfaction:*** Satisfaction With Life Scale (SWLS; 6), 5 items, 7-point Likert scale (Cronbach's $\alpha = .87$).
- ***Anxiety and Depression:*** Hospital Anxiety and Depression Scale (HADS; 21), 14 items (7 per subscale), 4-point Likert scale (Cronbach's $\alpha = .83$ for anxiety, .82 for depression).

2.4 *Procedure*

Following Institutional Ethics Committee approval, participants provided digital informed consent via a secure online survey platform. The questionnaire included demographic details, diagnostic delay queries, SWLS, and HADS. Data collection spanned 6 weeks, with reminders to maximize participation. Data were stored on encrypted servers, and medical records were verified with consent.

2.5 *Statistical Analysis*

Descriptive statistics summarize distributions. Normality was assessed via Shapiro-Wilk tests. Spearman's correlations tested H1–H3 due to non-normal life satisfaction data ($p = .027$). Multiple regression with dummy-coded diagnostic delay (< 1 year reference) tested H4. One-way ANOVAs compared outcomes across delay categories. Analyses were conducted using IBM SPSS Statistics (Version 26).

Vol. 3, Issue 5 May 2025 ISSN: 2584-0142

3. Results

The sample ($N = 50$) had a mean diagnostic delay category of 2.46 ($SD = 0.99$; 18% < 1 year, 36% 1–3 years, 28% 4–6 years, 18% > 6 years). Life satisfaction was moderate ($M = 23.74$, $SD = 5.95$). HADS-Anxiety ($M = 10.46$, $SD = 3.00$) and HADS-Depression ($M = 9.38$, $SD = 3.12$) indicated borderline clinical levels.

Table 1: *Descriptive Statistics*

Variable	*M*	*SD*	*N*
Diagnostic Delay Category	2.46	0.99	50
HADS-Anxiety	10.46	3.00	50
HADS-Depression	9.38	3.12	50
Life Satisfaction	23.74	5.95	50

Spearman's correlations showed no significant relationships between diagnostic delay and life satisfaction ($r_s = -.037$, $p = .799$), anxiety ($r_s = .019$, $p = .893$), or depression ($r_s = -.075$, $p = .604$), failing to support H1–H3. Significant correlations among outcomes included anxiety-depression ($r_s = .629$, $p < .001$), anxiety-life satisfaction ($r_s = -.435$, $p = .002$), and depression-life satisfaction ($r_s = -.384$, $p = .006$)

Table 2: *Spearman's Rho Correlations*

	Diagnostic Delay	HADS-Anxiety	HADS-Depression	Life Satisfaction
Diagnostic Delay	—	.019 (.893)	-.075 (.604)	-.037 (.799)
HADS-Anxiety	.019 (.893)	—	.629** (.000)	-.435** (.002)
HADS-Depression	-.075 (.604)	.629** (.000)	—	-.384** (.006)
Life Satisfaction	-.037 (.799)	-.435** (.002)	-.384** (.006)	—

Note: $N = 50$. Values are r_s (p-values). ** $p < .01$.

Multiple regression models with dummy-coded diagnostic delay were non-significant for life satisfaction ($R^2 = .009$, $F(3, 46) = 0.145$, $p = .933$), anxiety ($R^2 = .030$, $F(3, 46) = 0.471$, $p = .704$), and depression ($R^2 = .050$, $F(3, 46) = 0.806$, $p = .497$), failing to support H4. One-way ANOVAs showed no significant differences across delay categories (life satisfaction: $F(3, 46) = 0.145$, $p = .933$, $\eta^2 = .009$; anxiety: $F(3, 46) = 0.471$, $p = .704$, $\eta^2 = .030$; depression: $F(3, 46) = 0.806$, $p = .497$, $\eta^2 = .050$).

Vol. 3, Issue 5 May 2025 ISSN: 2584-0142

4. Discussion

Contrary to expectations, diagnostic delay did not significantly impact life satisfaction, anxiety, or depression, failing to support H1–H4. These null findings contrast with global studies (Culley et al., 2013) but align with (Grinberg, 2024), suggesting cultural resilience in India's collectivist context may buffer distress (Hofstede, 2001). Urban-biased sampling, with access to support groups like #EndoWarriors, likely contributed to moderate life satisfaction ($M = 23.74$) and borderline anxiety/depression levels. The small sample size ($N = 50$, $n = 9$ for < 1 and > 6 years) and low variability ($SD = 0.99$) reduced statistical power (15–25% for ANOVA/regression; 2). Unmeasured confounders, such as pain severity or social support, and recall bias in self-reported delay further limit findings.

Significant correlations among outcomes ($r_s = .629$ to $-.435$, $p < .006$) highlight psychological distress's role in quality of life, aligning with global research (Pope, Sharma & Sharma, 2015). India's healthcare challenges, including limited gynecological expertise and menstrual stigma (Sharma & Mishra, 2024), suggest rural women may face stronger effects, warranting further study. The findings challenge the biopsychosocial model (Engel,1977), indicating cultural moderators, and support self-determination theory (Deci & Ryan, 1985), as social support may fulfill relatedness needs. Practically, results advocate for psychological interventions, provider training, and mental health screening in endometriosis clinics, supporting the 2023 Women's Health Policy (Women's Health Policy, 2025).

5. Conclusion

This study found no significant effect of diagnostic delay on life satisfaction, anxiety, or depression among 50 Indian women with endometriosis, likely due to cultural resilience, small sample size, and urban bias. Significant correlations among outcomes underscore the need for psychological interventions to improve quality of life. Future research should use larger, mixed-methods designs, include rural participants, and measure confounders like pain severity to inform India's healthcare reforms. These findings contribute to understanding endometriosis in India's unique context and support policy efforts for early detection and mental health integration.

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Vol. 3, Issue 5 May 2025 ISSN: 2584-0142

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