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Prevalence of depression & anxiety in post-hysterectomy women & their association with quality of life: A cross-sectional hospital-based study

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Background & objectives: Depression and anxiety are known sequelae in women who undergo hysterectomy. This study aims to assess and screen the prevalence of depression, anxiety, and quality of life (QoL) in women who underwent hysterectomy for benign gynaecological conditions and compare it across different age groups (15-29, 30-39, and 40-49 yr).

Methods: This hospital-based cross-sectional study was conducted on 125 women who underwent hysterectomy in their reproductive age. Depression, anxiety, and QoL were assessed and screened using structured tools and analysed using JAMOV software.

Results: Moderate to severe depression and anxiety were present in 38 (30.4 per cent), and 35 (28 per cent) women, respectively. Comorbidities were significantly associated with higher anxiety prevalence ($P=0.035$), but not with depression. Urban residents and those above the poverty line had better QoL scores. Depression and anxiety showed strong positive correlations with each other ($r=0.949$, $P<0.001$). They also showed significant negative correlations with poorer QoL, particularly in physical, and psychological domains and the total QoL. The different age groups (15-29, 30-39, 40-49 yr) showed no significant differences in the prevalence of both depression and anxiety as well as with the total and domain-wise QoL scores.

Interpretation & conclusions: We found no significant difference in QoL outcomes based on the age at which the surgery was performed but identified a strong link between higher depression and anxiety scores and poorer QoL.

Key words Anxiety - depression - hysterectomy-menopause - mental health of women

Hysterectomy, commonly performed for gynaecological and obstetric conditions, is more prevalent in rural India (3.2%)¹⁻³. It may cause short-term and long-term health effects, including psychological issues⁴, potentially reducing quality of life (QoL), especially in younger women⁵⁻⁸.

Existing literature shows mixed findings, with some studies reporting improved QoL after hysterectomy^{8,9} while others document higher rates of depression and anxiety in subgroups of women^{6,10-14}. These variations highlight the need for context-specific evidence, particularly for women in their reproductive years where fertility loss, altered body image, and psychosocial concerns may be more pronounced.

Unindicated hysterectomy is a significant concern, more in uneducated women and in low-income Indian States like Jharkhand and Bihar, where mental disorders are also highly reported¹⁵⁻¹⁹. Despite this, few studies from eastern India have systematically screened for depression, anxiety, and their association with QoL in reproductive-age women following hysterectomy.

Accordingly, the present hospital-based study in Jharkhand was undertaken to fill this gap. Its objectives were: (i) to screen for depression and anxiety among women who underwent hysterectomy for benign gynaecological conditions in reproductive age (15–49 yr), (ii) to assess their association with QoL, and (iii) to compare outcomes across age groups (15–29, 30–39, and 40–49 yr). We hypothesized that higher depression and anxiety scores would be associated with poorer QoL, particularly in the physical and psychological domains.

Materials & Methods

This hospital-based cross-sectional study was conducted in the departments of Psychiatry and Obstetrics and Gynaecology, All India Institute of Medical Sciences-Deoghar, Deoghar, Jharkhand, eastern India. The study received approval from the Institutional Ethics Committee of AIIMS. All participants provided written informed consent and were interviewed using standardized Hindi-language questionnaires. The outpatient department (OPD) became functional in mid-2021, and during 2023 an average of three to four post-hysterectomy patients were attending daily. For the Indian Council of Medical Research – Short Term Studentship (ICMR-STs) project, a two-month data collection period was stipulated.

Sample size calculation and sampling technique: Approximately 200 post-hysterectomy patients attended the OBG OPD during this period, from which 125 consecutive eligible women were recruited. Only benign indications were included, while women with malignant conditions were excluded to minimize confounding. The minimum sample size of 124 was calculated using Statulator (<https://statulator.com/SampleSize/ss1M.html>), an open-source online

calculator with finite population correction, assuming a population size of 200, an expected standard deviation of 4.58 (as reported by Mathur *et al*¹⁹ in Rajasthan among hysterectomy patients using the Hospital Anxiety and Depression Scale), 95 per cent confidence level, and a precision of 0.5. Data collection was completed during July and August 2023.

Inclusion and exclusion criteria: Women aged 15–49 yr who had undergone hysterectomy in their reproductive years and attended the OBG department were screened. Inclusion criteria required hysterectomy within the past five years, a window chosen to balance recall reliability with capturing short- and medium-term sequelae. Women who were postmenopausal or within one month of surgery were excluded.

Socioeconomic status was classified as below poverty line (BPL) if the participant possessed a red ration card, while others were considered above poverty line (APL)²⁰. Clinical pallor was recorded at the time of current evaluation as a proxy indicator of anaemia. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9)²¹, with severity thresholds explicitly stated (5 = mild, 10 = moderate, 15 = moderately severe, 20 = severe). Anxiety was screened with the Generalized Anxiety Disorder-7 scale (GAD-7)²², applying a cut-off of eight as recommended by a meta-analysis²³. QoL was assessed with the WHO Quality of Life-Brief Version (WHOQOL-BREF) (Hindi version)²⁴ across physical, psychological, social, and environmental domains. Severity definitions were applied as per tool guidelines. Internal consistency was confirmed with Cronbach's alpha: WHOQOL-BREF (0.861), GAD-7 (0.955), and PHQ-9 (0.928).

Statistical analysis: Data were digitized in Microsoft Excel 2021 and analysed in JAMOVI v2.3.26 (<https://www.jamovi.org/>). Categorical variables were expressed as frequencies and percentages, continuous as mean \pm SD. Chi-square test examined associations of depression and anxiety with sociodemographic and clinical factors, while t-tests and one-way ANOVA compared QoL scores across groups. Pearson's correlation coefficients were used to explore relationships between depression, anxiety, and QoL domains. *P* value <0.05 was considered statistically significant.

Results

Sociodemographic and clinical profile: Data were collected from 125 women (mean age 39.1 \pm 7.0 yr;

Table. Prevalence of depression and anxiety among women who underwent hysterectomy among various age groups (n=125)

Variable	Depression			P value	Anxiety			P value*
	Minimal	Mild	Moderate to severe		Minimal	Mild	Moderate to severe	
Current age (in completed yr)								
15-29	9 (60)	3 (20)	3 (20)	0.23	11 (73.3)	1 (6.7)	3 (20)	0.25
30-39	13 (32.5)	10 (25)	17 (42.5)		18 (45)	7 (17.5)	15 (37.5)	
40-49	31 (44.3)	21 (30)	18 (25.7)		45 (64.3)	8 (11.4)	17 (24.3)	
Age at the time of hysterectomy (in completed yr)								
15-29	15 (41.7)	8 (22.2)	13 (36.1)	0.72	21 (58.3)	3 (8.3)	12 (33.3)	0.83
30-39	21 (41.2)	17 (33.3)	13 (25.5)		30 (58.8)	8 (15.7)	13 (25.5)	
40-49	17(44.7)	9 (23.7)	12 (31.6)		23 (60.5)	5 (13.2)	10 (26.3)	
Educational level								
Illiterate	24 (42.1)	13 (22.8)	20 (35.1)	0.06	32 (56.1)	9 (15.8)	16 (28.1)	0.87
Literate	29 (42.6)	21 (30.9)	18 (26.5)		42 (61.8)	7 (10.3)	19 (27.9)	
Working for pay; Yes	4 (57.1)	0 (0)	3 (42.9)	0.25	4 (57.1)	0 (0)	3 (42.9)	0.46
Place of residence: Rural	29 (37.7)	21 (27.3)	27 (35.1)	0.29	43 (55.8)	10 (13)	24 (31.2)	0.57
Socioeconomic status; below poverty line	25 (44.6)	15 (26.8)	16 (28.6)	0.88	35 (62.5)	7 (12.5)	14 (25)	0.77
Co-morbidities present	6 (40)	5 (33.3)	4 (26.7)	0.84	6 (40)	5 (33.3)	4 (26.7)	0.03
Reason for hysterectomy								
Abnormal uterine bleeding	10 (45.5)	6 (27.3)	6 (27.3)	0.77	16 (72.7)	1 (4.5)	5 (22.7)	0.444
Pelvic inflammatory disease	16 (34.4)	14 (29.8)	17 (36.2)		24 (51.1)	6 (12.8)	17 (36.2)	
Tumour (<i>i.e.</i> fibroid)	13 (52)	7 (28)	5 (20)		17 (68.0)	3 (12.0)	5 (20.0)	
Endometrial hyperplasia	14 (45.2)	7 (22.6)	10 (32.3)		17 (54.8)	6 (19.4)	8 (25.8)	

*chi square test

range 23–49), more than half aged 40–49 (n=70, 56%). The mean age at hysterectomy was 35.0±7.3 yr. Most participants were rural (n=77, 61.6%), illiterate (n=57, 45.6%), and homemakers (n=118, 94.4%); 55.2 per cent (n=69) were above the poverty line. Pelvic inflammatory disease (n=47, 37.6%) and endometrial hyperplasia (n=31, 24.8%) were the leading indications. Other indications included abnormal uterine bleeding (n=22, 17.6%), and fibroid (n=25, 20%). Only benign cases were included. Diabetes (7.2%) was the most frequent comorbidity.

Screened prevalence of depression and anxiety: Results are shown in table. Overall, 30.4 per cent had moderate to severe depression, while 27.2 per cent and 42.4 per cent had mild and minimal symptoms. The highest prevalence was among women aged 30–39 (42.5%), rural residents, the illiterate, and those with PID, though none reached statistical significance ($P>0.05$). For anxiety, 59.2 per cent reported minimal, 12.8 per cent mild, and 28.0 per cent moderate to severe symptoms. Anxiety was significantly higher in women with comorbidities (33.3% vs. 28.2%, $P=0.035$) but showed no association with age or sociodemographic factors.

Quality of life (QoL): Mean domain scores were: physical 20.3±4.1, psychological 17.0±3.3, social 11.6±1.2, and environmental 28.2±3.8 (Supplementary Table). Urban women and those above the poverty line had significantly higher total QoL scores. Better education was linked to higher psychological and environmental scores. No differences were observed by current age or age at hysterectomy.

Correlation analysis: Depression and anxiety were strongly correlated ($r=0.95$, $P<0.001$). Both showed significant negative correlations with total QoL (depression: $r=-0.70$; anxiety: $r=-0.71$, both $P<0.001$).

Discussion

In our cohort, 40.8 per cent underwent hysterectomy between ages 30–39 yr, with a mean age of 35 yr. In contrast, Rout *et al*²⁵ found the highest prevalence in women aged 45–59, likely reflecting their community-based design and inclusion of older participants. Our hospital-based OPD study was restricted to women up to 49 yr, where NFHS-5 reports higher hysterectomy prevalence in women aged 15–45²⁶. Notably, 28.8

per cent in our study underwent hysterectomy before 30 yr, consistent with NFHS-5, which also shows that half of procedures occur before age 35^{26,27}. Rural predominance (61.6%) and high illiteracy (45.6%) paralleled national patterns where limited access and low awareness contribute to higher rates³.

Depression occurred in 27.2 per cent (mild) and 30.4 per cent (moderate–severe). This aligns with Yang *et al*²⁸, who reported 34.4 per cent post-hysterectomy depression²⁸. Moderate–severe depression peaked in the 30–39 age group (42.5%), whereas NMHS 2015–16 noted highest prevalence in 40–49 yr²⁹. Among those operated before 30 yr, 36.1 per cent reported moderate–severe depression, echoing Moore *et al*³⁰, who highlighted younger age as a risk factor. This suggests early hysterectomy may increase vulnerability, though our cross-sectional design captures current symptom burden and cannot confirm causality. Anxiety was high and often predicts depression⁶.

Moderate–severe anxiety was observed in 28 per cent. Laughlin-Tommaso *et al*⁷ and others similarly reported elevated post-hysterectomy anxiety^{7,31}. The 30–39 age group showed highest prevalence (37.5%), while NMHS reported peaks in 40–59 yr³². In our study, one-third of those aged 15–29 reported significant anxiety, underlining younger women's psychosocial concerns related to fertility and body image. Anxiety was significantly higher in women with comorbidities, stressing the importance of holistic follow up.

No significant differences in total QoL were found by age at hysterectomy, consistent with Mohd Suan *et al*³³. Post-hysterectomy issues like urinary incontinence, sexual dysfunction, and prolapse can affect QoL across domains³⁴. However, better education and urban residence predicted higher QoL, mirroring Sumdaengrit *et al*⁸. Lower education may restrict awareness and healthcare access, while urban settings provide greater support. Depression and anxiety were strongly and negatively associated with total QoL, supporting findings by Alshelleh *et al*³⁵.

Findings support integration of routine PHQ-9 and GAD-7 screening in post-hysterectomy care, with referral for scores ≥ 10 (PHQ-9) or ≥ 8 (GAD-7). Counselling and support should particularly target younger women, rural residents, and those with lower education or comorbidities. Future studies should adopt community-based, longitudinal or case-control designs with larger samples to clarify causal links and long-term effects. These findings underscore the clinical need to integrate psychological screening into

post-hysterectomy follow up, linking mental-health assessment with improved quality-of-life outcomes among reproductive-age women.

Strengths include the use of validated Hindi tools with strong internal consistency, explicit severity thresholds, and focus on reproductive-age women from a low-resource setting, an under-researched group. Limitations include single-centre OPD recruitment, absence of a comparator group, cross-sectional design, and reliance on screening tools rather than diagnostic interviews. Selection bias may have occurred as only OPD attendees were included, possibly underestimating community morbidity, and associations should not be interpreted as causal.

This study highlights a substantial burden of depression and anxiety among reproductive-age women attending an OPD after hysterectomy, with both strongly linked to poorer total QoL. While no significant QoL difference was found by age at surgery, younger women showed higher psychological morbidity. These findings emphasize the need for systematic psychological screening, counselling, and tailored support as part of post-hysterectomy follow-up, particularly in low-resource settings.

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Conflicts of Interest: None.

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References

1. Nesbitt-Hawes EM, Maley PE, Won HR, Law KS, Zhang CS, Lyons SD, *et al*. Laparoscopic subtotal hysterectomy: Evidence and techniques. *J Minim Invasive Gynecol* 2013; 20 : 424-34.
2. Hammer A, Rositch AF, Kahlert J, Gravitt PE, Blaakaer J, Søgaard M. Global epidemiology of hysterectomy: Possible impact on gynecological cancer rates. *Am J Obstet Gynecol* 2015; 213 : 23-9.
3. Singh A, Govil D. Hysterectomy in India: Spatial and multilevel analysis. *Womens Health (Lond)* 2021; 17 : 17455065211017068.
4. Lee HJ, Kim SJ, Park EC. Psychiatric outcomes after hysterectomy in women with uterine myoma: A population-based retrospective cohort study. *Arch Womens Ment Health* 2017; 20 : 487-94.

5. Goudarzi F, Khadivzadeh T, Ebadi A, Babazadeh R. Iranian Women's Self-concept after Hysterectomy: A Qualitative Study. *Iran J Nurs Midwifery Res* 2021; 26 : 230-7.
6. Harnod T, Chen W, Wang JH, Lin SZ, Ding DC. Hysterectomies are associated with an increased risk of depression: A population-based cohort study. *J Clin Med* 2018; 7 : 366.
7. Laughlin-Tommaso SK, Satish A, Khan Z, Smith CY, Rocca WA, Stewart EA. Long-term risk of de novo mental health conditions after hysterectomy with ovarian conservation: A cohort study. *Menopause* 2020; 27 : 33-42.
8. Sumdaengrit B. Quality of life in Thai women after hysterectomy. *COJ Nurs Healthc* 2019; 5 : 494-499.
9. Rajora P, Sharma D, Singh G, Kaur P, Galhotra A, Galhotra A. Assessment of quality of life after hysterectomy using European quality of life five dimension scale (EQ5D). *J Pharm Bioallied Sci* 2023; 15 : S1056-8.
10. Ceausu I, Shakir YA, Lidfeldt J, Samsioe G, Nerbrand C. The hysterectomized woman. *Maturitas* 2006; 53 : 201-9.
11. Helmy YA, Hassanin IM, Elraheem TA, Bedaiwy AA, Peterson RS, Bedaiwy MA. Psychiatric morbidity following hysterectomy in Egypt. *Int J Gynaecol Obstet* 2008; 102 : 60-4.
12. Choi HG, Rhim CC, Yoon JY, Lee SW. Association between hysterectomy and depression: A longitudinal follow-up study using a national sample cohort. *Menopause* 2020; 27 : 543-9.
13. Wilson L, Pandeya N, Byles J, Mishra G. Hysterectomy and incidence of depressive symptoms in midlife women: the Australian Longitudinal Study on Women's Health. *Epidemiol Psychiatr Sci* 2018; 27 : 381-92.
14. Okunlola MA, Umuერი C, Omigbodun OO, Morhason-Bello IO, Okonkwo SN, Ojengbede OA. Pattern of mental ill health morbidities following hysterectomy for benign gynaecological disorders among Nigerian women. *Int J Ment Health Syst* 2009; 3 : 18.
15. Medical Dialogues. 703 Unwanted Hysterectomies in Bihar: HC allows plea seeking CBI Investigation. Available from: <https://medicaldialogues.in/state-news/bihar/703-unwanted-hysterectomies-in-bihar-hc-allows-plea-seeking-cbi-investigation-95755>, accessed on September 5, 2025.
16. Davis AA. Unindicated hysterectomies in India: The aftermath. *BMJ Case Rep* 2019; 12 : e230129.
17. Bhaumik S. Oxfam calls for new regulations to reduce unnecessary hysterectomies in private hospitals. *BMJ* 2013; 346 : f852.
18. Mathur KL, Sharma M, Mazumdar M, Talati S, Srivastav S. Psychological well-being, marital adjustment and quality of life after hysterectomy: A comparative study. *Int J Reprod Contracept Obstet Gynecol* 2018; 7 : 4960.
19. India's Richest and Poorest States: Check all the details here! Jagranjosh.com. 2024. Available from: <https://www.jagranjosh.com/general-knowledge/indias-richest-and-poorest-states-1726667363-1>, accessed on September 5, 2025.
20. National Food Security Portal, Department of Food & Public Distribution, Government of India. *Public Distribution System (PDS)*. Available from: https://nfsa.gov.in/portal/PDS_page, accessed on September 5, 2025.
21. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med* 2001; 16 : 606-13.
22. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: The GAD-7. *Arch Intern Med* 2006; 166 : 1092-7.
23. Plummer F, Manea L, Trepel D, McMillan D. Screening for anxiety disorders with the GAD-7 and GAD-2: A systematic review and diagnostic metaanalysis. *Gen Hosp Psychiatry* 2016; 39 : 24-31.
24. Saxena S, Chandiramani K, Bhargava R. WHOQOL-Hindi: A questionnaire for assessing quality of life in health care settings in India World health organization quality of life. *Natl Med J India* 1998; 11 : 160-5.
25. Rout D, Sinha A, Palo SK, Kanungo S, Pati S. Prevalence and determinants of hysterectomy in India. *Sci Rep* 2023; 13 : 14569.
26. National family health survey. *National Family Health Survey (NFHS-5)- 2019-21*. Available from: <https://www.nfhsiips.in/nfhsuser/nfhs5.php>, accessed on September 5, 2025.
27. Desai S, Shukla A, Nambiar D, Ved R. Patterns of hysterectomy in India: A national and state-level analysis of the fourth national family health survey (2015-2016). *BJOG* 2019; 126 : 72-80.
28. Yang Y, Zhang X, Fan Y, Zhang J, Chen B, Sun X, *et al*. Correlation analysis of hysterectomy and ovarian preservation with depression. *Sci Rep* 2023; 13 : 9744.
29. Gautham MS, Gururaj G, Varghese M, Benegal V, Rao GN, Kokane A, *et al*. The National Mental Health Survey of India (2016): Prevalence, socio-demographic correlates and treatment gap of mental morbidity. *Int J Soc Psychiatry* 2020; 66 : 361-72.
30. Moore JT, Tolley DH. Depression following hysterectomy. *Psychosomatics* 1976; 17 : 86-9.
31. Khan S, Channa SR, Bawany MA. Depression and anxiety post total abdominal hysterectomy with bilateral salpingo-oophorectomy. *TPMJ* 2020; 27 : 217-24.
32. Manjunatha N, Jayasankar P, Suhas S, Rao GN, Gopalkrishna G, Varghese M, *et al*. Prevalence and its correlates of anxiety disorders from India's national mental health survey 2016. *Indian J Psychiatry* 2022; 64 : 138-42.
33. Mohd Suan MA. Short-term changes in quality of life among women who had hysterectomy for benign indications at young age: A preliminary study. *Thai J Obstet Gynaecol* 2017; 25 : 284-91.
34. Mota RL. Female urinary incontinence and sexuality. *Int Braz J Urol* 2017; 43 : 20-8.
35. Alshelleh S, Alhawari H, Alhourri A, Abu-Hussein B, Oweis A. Level of depression and anxiety on quality of life among patients undergoing hemodialysis. *Int J Gen Med* 2023; 16 : 1783-95.