ORIGINAL ARTICLE

Factors Affecting Stress, Anxiety, Depression and Low Self-Esteem among Post-Hysterectomy Women

Afshan Bano Memon[1*], Syed Muhammad Zulfiqar Hyder Naqvi[2], Syed Imtiaz Ahmed Jafry[2] and Urooj Naz[1]

[1]*Doctor Ruth KM Pfau Civil Hospital, Karachi, Pakistan*
[2]*Department of Community Medicine, Baqai Medical College, Karachi, Pakistan*

Abstract

Background: Literature suggests that women with a hysterectomy suffer from many psychological and emotional problems that may have a significant impact on their mental well-being. In Pakistan, many ailments in females, both physical and mental, particularly those related to reproductive health, often go neglected due to various cultural and societal taboos attached with their reporting. It is therefore crucial to identify the factors contributing to their development in the first place.

Objective: To determine the prevalence and associated factors of stress, anxiety, depression, and low self-esteem among post-hysterectomy women.

Methods: A cross-sectional study was conducted at Baqai Institute of Health Sciences, Baqai Medical University, from October 2022 to March 2024. Women who had undergone a hysterectomy at least 3 months prior to the study were included in the study, using a non-probability consecutive sample technique. Data were collected by means of a questionnaire comprising the Depression Anxiety and Stress Scale-21 scale for assessing depression, anxiety, and stress; and the Rosenberg Self-Esteem scale to assess self-esteem. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20, and inferential analysis was performed using the multiple linear regression method.

Results: A total of 601 women were included in the study. The mean age of the patients was 46.41±11.1 years, 480 (79.9%) of them were married, the mean number of children in the family was 4.0±1.3, 254 (42.3%), 414 (68.9%) of them lived in an extended family, 353 (58.7%) lived in a rented house whereas their mean duration since surgery was 2.6±1.5 years. The results showed that 25 (4.2%) of the patients had severe stress, 320 (53.2%) had extremely severe anxiety, whereas 47 (7.5%) had extremely severe depression. Multiple linear regression analysis revealed that patients' age, number of children in family, education level, and type of residence were significant predictors of all of their stress, anxiety, and depression, as well as of their self-esteem.

Conclusion: Many patient characteristics were significant predictors of their stress, anxiety, and depression levels as well as of their self-esteem score. It is therefore critical to consider these factors while treating post-hysterectomy women for any mental illness.

Keywords: *Hysterectomy, stress, anxiety, depression, self-esteem, demography, patients.*

INTRODUCTION

Hysterectomy is a surgery performed to remove the uterus. Depending upon the pathology, the ovaries and fallopian tubes may also need removal [1]. Removing the uterus means that a woman will not menstruate and can no longer get pregnant. The most common reasons for a hysterectomy include uterine myoma, endometriosis, uterine prolapse, genital cancers, and other benign conditions [1].

Past literature suggests that women with hysterectomy suffer from many psychological and emotional problems that have a significant impact on their mental well-being and quality of life [2]. These mental health issues may not only stem from the surgical procedure itself, but other factors, such as hormone imbalances and surgical approaches used, may also contribute to them [3].

Stress is defined as a state of mental tension caused by a difficult situation [4]. Stress is a normal human reaction to everyday pressures, but it can become a problem when it disturbs an individual's day-to-day functioning. Stress contributes directly to many psychological and physiological disorders and affects mental and physical health [5].

According to the Diagnostic and Statistical Manual of Mental Disorders, generalized anxiety is defined as excessive worrying about various events or activities persisting for at least 6 months, while the individual finds it difficult to control [6]. It has been reported that women who underwent hysterectomy feared looking less womanly and were most anxious about how the surgery would change their appearance [7].

According to the World Health Organization, depression is a common mental disorder characterized by feelings such as sadness, low self-worth, loss of interest or pleasure, guilt, disturbed sleep, and poor concentration [8]. Many women feel depressed after a hysterectomy, as losing the ability to conceive is disturbing for many women. It has been documented that women who have undergone hysterectomy have an increased risk of developing depression [9]. Literature reports that patients have higher stress, anxiety, and depression levels post-hysterectomy as compared to pre-hysterectomy [10-12].

**Corresponding author: Afshan Bano Memon, Doctor Ruth KM Pfau Civil Hospital, Baba-e-Urdu Road, Karachi, Pakistan, Email: dr_afsh@yahoo.com*
Received: February 28, 2025; Revised: July 29, 2025; Accepted: September 17, 2025
DOI: https://doi.org/10.37184/lnjpc.2707-3521.8.2

  ISSN: 2708-9134 (Online) Liaquat National Journal of Primary Care 2026; 8(1): 14-19

According to the American Psychological Association, self-esteem reflects a person's self-image, view of accomplishment and capabilities, and perceived success in living up to them, as well as the way in which others view and respond to that person [13]. As the uterus is a symbol of femininity, fertility, and maternity, dissatisfaction with one's self-image is an obvious consequence of a hysterectomy [14]. A previous study has reported that 41% of patients had low self-esteem post-hysterectomy [15].

In Pakistan, many ailments in females, both physical and mental, particularly those related to reproductive health, often go neglected due to various cultural and societal taboos attached with their reporting. It is therefore crucial to identify the factors contributing to their development in the first place. This study tries to address the research question: Do certain patient characteristics affect the mental health and self-esteem among post-hysterectomy women? It is hypothesized that many patient characteristics are indeed responsible for the development of mental health and self-esteem issues among post-hysterectomy women. To the best of the authors' knowledge, recent local literature that addresses this research question is limited at best [16, 17]. This study was therefore conducted to determine the prevalence and associated factors of stress, anxiety, depression, and low self-esteem among post-hysterectomy women. The current study adds valuable data to the limited local evidence base and provides data driven recommendations for clinical practice and future policy application.

METHODS

A cross-sectional study was conducted at Baqai Institute of Health Sciences, Karachi, Pakistan from October, 2022 to March, 2024 with data collection performed at a public sector tertiary care hospital of Karachi. The ethical approval of the study was taken from Baqai Institute of Health Sciences (Reference Number: FHM 74-2022) dated 21st September, 2022.

The study population consisted of women who had undergone and came for follow-up check-ups in the Gynecology outpatient department of a tertiary care public hospital in Karachi. Women who had undergone hysterectomy at least 3 months prior to the study were included, whereas women with any physical deformity, any terminal illness, or those with a confirmed diagnosis of or taking any treatment for mental illness were excluded from the study.

Keeping the percentage frequency of the study outcome at 50% for the most liberal estimate, with 95% confidence level and 4% precision, the required sample size was calculated to be 601 women by using the online Openepi sample size calculator for the calculation of sample size for a single proportion [18]. The study participants were approached by using a non-probability consecutive sample technique.

Data were collected by means of an interview using the study questionnaire that consisted of three sections. Section A consisted of demographic information such as age, number of children, family situation, marital status, type of family, educational level, monthly income, and employment status. Section B comprised the Depression, Anxiety, and Stress Scale -21 Items [19]. It consisted of a total of 21 questions with seven questions each for assessing depression, anxiety, and stress on a scoring scale of 0, 1, 2 and 3. The score of each measure was multiplied by two to get the final score. The maximum score for each measure was therefore 42. The categorization of each these three measures into normal, mild, moderate, severe and extremely severe was based on the following thresholds: For Depression 0-9 Normal, 10-13 Mild, 14-20 Moderate, 21-27 Severe and 28 or Above Extremely Severe; For Anxiety 0-7 Normal, 8-9 Mild, 10-14 Moderate, 15-19 Severe and 20 or Above Extremely Severe; and for Stress 0-14 Normal, 15-18 Mild, 19-25 Moderate, 26-33 Severe and 34 or Above Extremely Severe [20]. Section C consisted of the Rosenberg Self-Esteem Scale, a 10-item scale that is one of the most widely used self-esteem measures [21]. These items were scored on Likert Scale of 0, 1, 2, 3 from strongly agree, agree, disagree, to strongly disagree for items 1, 3, 4, 7, and 10. Reverse scoring was done for items 2, 5, 6, 8, and 9. The score range was from 0 to 30. There were no thresholds, and a higher score represented a higher self-esteem and vice versa.

Data were entered on the Statistical Package for Social Sciences (SPSS) version 20. Descriptive analysis, such as frequencies and percentages, were calculated for categorical variables, while means and standard deviation were calculated for continuous variables. Inferential analysis was performed by applying the multiple linear regression method to check for associations between participant characteristics and the study outcomes. The significance level was kept at 0.05.

RESULTS

The mean age of the patients were 46.41±11.1 years, 480 (79.9%) of them were married, the mean number of children in family was 4.0±1.3, 254 (42.3%) were illiterate whereas 215 (35.8%) had intermediate education, 421 (70.0%) had monthly household income more than 25,000 rupees, 414 (68.9%) of them lived in extended family, 353 (58.7%) lived in rented house, 471 (78.4%)

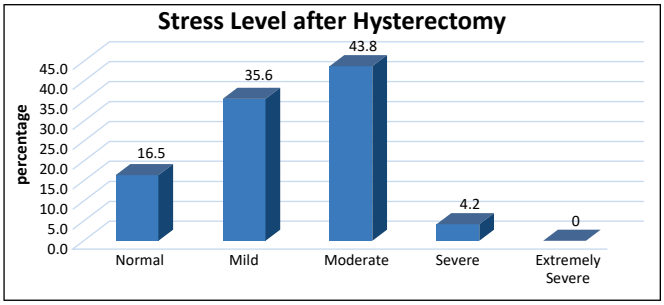

Fig. (1): Stress level after hysterectomy.

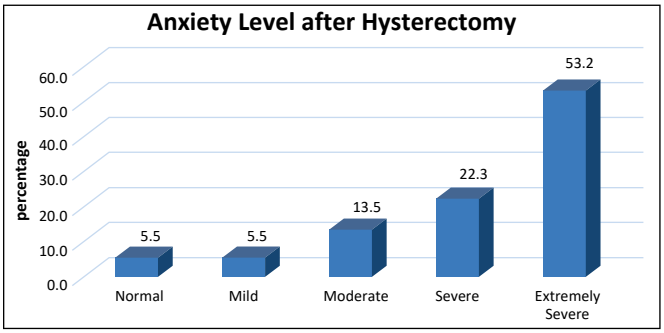

Fig. (2): Anxiety level after hysterectomy.

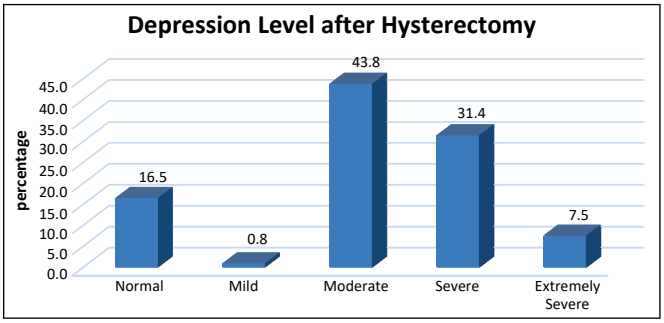

Fig. (3): Depression level after hysterectomy.

were housewives whereas their mean duration since surgery was 2.6±1.5 years.

The study results showed that a little less than half of the patients had moderate to severe stress post-hysterectomy (n=288, 48.0%) (**Fig. 1**), a majority of them had severe to extremely severe anxiety (n=454, 75.5%) (**Fig. 2**), whereas more than third of the patients had severe to extremely severe depression (n=236, 38.9%) (**Fig. 3**).

Multiple linear regression analysis revealed that patients' age, number of children in family, education level, monthly household income, type of residence, and duration since surgery were significant predictors of their stress (p<0.05 for all) (**Table 1**).

Moreover, it was seen that patients' age, number of children in family, education level, monthly household income, employment status, type of residence, and duration since surgery were significant predictors of their anxiety (p<0.05 for all) (**Table 2**).

Table 1: Multiple linear regression analysis of association between patient characteristics and stress score.

Patient Characteristics (n=601)	Unstandardized Coefficients	95% Confidence interval		p-value
	Beta	Lower	Upper	
Age	-0.057	-0.100	-0.014	0.009
Number of Children in Family	-0.550	-1.073	-0.027	0.039
Marital Status	0.415	-1.083	1.912	0.587
Education Level	0.817	0.431	1.203	<0.001
Type of Family	-0.586	-1.715	0.542	0.308
Monthly Household Income (Rs.)	-2.228	-3.666	-0.789	0.002
Employment Status	0.655	-0.190	1.499	0.128
Type of Residence	6.987	5.968	8.005	<0.001
Duration since Surgery	0.948	0.623	1.273	<0.001

Table 2: Multiple linear regression analysis of association between patient characteristics and anxiety score.

Patient Characteristics (n=601)	Unstandardized Coefficients	95% Confidence interval		p-value
	Beta	Lower	Upper	
Age	0.091	0.055	0.127	<0.001
Number of Children in Family	0.706	0.264	1.149	0.002
Marital Status	0.403	-0.864	1.670	0.532
Education Level	0.741	0.415	1.068	<0.001
Type of Family	0.249	-0.706	1.204	0.609
Monthly Household Income (Rs.)	-2.870	-4.087	-1.653	<0.001
Employment Status	-0.740	-1.454	-0.025	0.042
Type of Residence	4.829	3.968	5.691	<0.001
Duration since Surgery	0.523	0.247	0.798	<0.001

Furthermore, it was found that patients' age, number of children in family, education level, type of family, type of residence, and duration since surgery were significant predictors of their depression (p<0.05 for all) (**Table 3**).

Table 3: Multiple linear regression analysis of association between patient characteristics and depression score.

Patient Characteristics (n=601)	Unstandardized Coefficients	95% Confidence interval		p-value
	Beta	Lower	Upper	
Age	-0.046	-.085	-0.006	0.023
Number of Children in Family	-0.670	-1.150	-0.191	0.006
Marital Status	0.909	-0.465	2.282	0.194
Education Level	0.729	0.374	1.083	<0.001
Type of Family	2.815	1.780	3.850	<0.001
Monthly Household Income (Rs.)	0.402	-0.918	1.721	0.550
Employment Status	-0.289	-1.063	0.485	0.464
Type of Residence	7.206	6.272	8.140	<0.001
Duration since Surgery	0.333	0.034	0.631	0.029

Multiple linear regression analysis further revealed that patients' age, number of children in family, marital status, education level, and type of residence were significant predictors of their self-esteem score (p<0.05 for all) (**Table 4**).

Table 4: Multiple linear regression analysis of association between patient characteristics and self-esteem score.

Patient Characteristics (n=601)	Unstandardized Coefficients	95% Confidence interval		p-value
	Beta	Lower	Upper	
Age	0.015	0.004	0.026	0.009
Number of Children in Family	0.242	0.104	0.380	0.001
Marital Status	-1.279	-1.674	-0.885	<0.001
Education Level	-0.638	-0.739	-0.536	<0.001

Patient Characteristics (n=601)	Unstandardized Coefficients	95% Confidence interval		p-value
	Beta	Lower	Upper	
Type of Family	-0.279	-0.576	0.018	0.066
Monthly Household Income (Rs.)	0.226	-0.153	0.605	0.241
Employment Status	-0.123	-0.345	-0.100	0.279
Type of Residence	-0.858	-1.126	-0.590	<0.001
Duration since Surgery	0.075	-0.011	-0.160	0.088

DISCUSSION

The study results showed that patients' age, number of children in family, marital status, education level, monthly household income, employment status, type of residence, and duration since surgery were all significantly associated with stress, anxiety, and depression levels of the patients. Moreover, patients' age, number of children in family, marital status, education level, and type of residence were found to be significant predictors of their self-esteem score.

It was found that almost half of the patients had moderate to severe stress post-hysterectomy. Though recent local literature could not be found for a meaningful comparison, a study from Jordan reported that a great majority of patients had moderate or higher stress post-hysterectomy [22]. These findings highlight that losing the ability to conceive in a woman of reproductive age likely results in apprehension towards the behavior of relatives, particularly the spouse in the case of a married individual.

Moreover, 75.5% patients in this study had severe to extremely severe anxiety post-hysterectomy. An earlier local study though, reported only 27.2% patients to have anxiety post-hysterectomy [10]. This difference in findings is likely due to the use of different tools for measuring anxiety in both studies.

Furthermore, 82.7% of patients were found to have moderate to extremely severe depression post-hysterectomy. Literature reports depression to be the most common health condition in patients after hysterectomy [23]. Patients after a hysterectomy are understandably prone to suffer from depression because of the severe mental impact of this traumatic experience on these individuals.

It was seen that age was significantly associated with stress, anxiety, and depression in patients, a finding well in line with the published literature [10, 11, 24]. Younger people, on one hand, may have a greater psychological impact of hysterectomy as they are unlikely to have completed their family, but may have more effective coping mechanisms or a stronger ability to adapt to changes in their health and body image. Older individuals, on one hand, are likely to have completed their family but may have pre-existing health conditions, along with peri-menopausal symptoms, and the combination of these conditions with the stress of hysterectomy can affect their psychological well-being.

Moreover, low parity was significantly associated with higher levels of stress and depression in patients. Previous literature also reports a significant association between the number of children and stress levels post-hysterectomy [10, 11]. The relationship of mental health problems with the number of children is likely related to concerns about fertility after a hysterectomy, especially if the individual desires more children or experiences societal pressure related to family size.

Moreover, a higher education level was significantly associated with greater stress, anxiety, and depression in patients. Earlier studies have also reported similar findings [10, 11]. Educated people frequently have greater access to health information from a variety of sources, including books, articles, and the internet and have better health literacy. While this is generally beneficial, it can also mean that such individuals have more information to process and consider, and may become more aware of health risks and potential complications of their surgery, leading to increased stress and anxiety levels.

Moreover, depression levels were seen to be higher in patients living in extended families. Patients in extended families may have more responsibilities toward their in-laws and may not always get the needed emotional support to deal with the emotional challenges of a hysterectomy. Further research is recommended to better understand this relationship.

A lower monthly household income was found to be significantly associated with higher levels of stress and anxiety in patients. The higher prevalence of mental health problems in low-income households might be attributed to various factors, such as the economic burden imposed by increased healthcare costs, limited access to mental health resources, and a higher likelihood of facing additional stressors in their daily lives.

Moreover, patients who had a rented place of residence had significantly higher stress, anxiety, and depression levels. The uncertainty associated with renting, such as potential changes in living arrangements, could contribute to heightened stress and anxiety and, consequently, an increased risk of depression. In contrast, individuals with their own residence benefit from a sense of stability, financial security, and control over their living environment, which can serve as a buffer against developing mental health problems.

Furthermore, a longer duration since surgery was found to be significantly associated with higher levels of stress, anxiety, and depression in patients. A previous study also found a significant association between the duration since hysterectomy and anxiety [17]. The psychological effects of having a hysterectomy are considerable. Patients may experience a variety of emotions, such

as grief about their loss and fear about their inability to conceive anymore. A longer duration since surgery may exacerbate these feelings and increase their psychological manifestations.

Interestingly, parity of patients was found to be a significant predictor of their self-esteem score. An earlier study also reported that participants who had completed their family and didn't want further children had higher self-esteem, whereas those who wanted more children had low self-esteem levels [25]. Similarly, another study reported a significant association between the number of children and the self-esteem of patients after hysterectomy [26]. High parity may have a positive impact on self-esteem as patients with high parity are less likely to be worried about completing their family and are less distressed about their ability to conceive after hysterectomy, while those with low parity may have a greater impact of their surgery on their self-image.

Moreover, the marital status of patients was a significant predictor of their self-esteem score, a finding well in line with the published literature [15, 26]. Hysterectomy can lead to significant physical and emotional changes, which may challenge one's sense of identity and role within the marriage. This can particularly affect self-esteem in married individuals if they feel that they are unable to fulfill their role as a spouse or partner in the same way as before.

Furthermore, the education level of patients was significantly associated with their self-esteem, with illiterate participants demonstrating higher self-esteem as compared to their educated counterparts. Likewise, an earlier study reported a significant association of self-esteem with the education level of patients' post-hysterectomy [26]. Higher education tends to be associated with a greater level of knowledge, and thus consequences or risk related to hysterectomy and menopause can be better understood by such patients, hence the negative effect on their self-esteem.

The type of residence was also found to be a significant predictor of self-esteem scores post-hysterectomy, with individuals in their own residences demonstrating higher self-esteem scores than those in rented accommodations. Individuals residing in their own homes typically have greater control over their living space, and this sense of ownership and autonomy may contribute to a greater feeling of self-esteem, even in those who have experienced hysterectomy.

This study has certain limitations. It is acknowledged that due to the cross-sectional nature of the study, a causal relationship between patient characteristics and study outcomes could not be established. Moreover, it is recognized that, being a single-center study, the generalization of the study findings is limited.

CONCLUSION

It was concluded that, in line with the study hypothesis, many patient characteristics were found to be significant predictors of their stress, anxiety, and depression levels as well as of their self-esteem score. It is therefore critical to consider these factors while treating post-hysterectomy women for any mental illness.

Based on the study findings, data-driven recommendations for clinical practice and future policy application include long-term follow-up plans for patients at high risk of developing mental health issues post-hysterectomy, including regular mental health check-ups, in order to track their psychological well-being over time. Healthcare providers should also implement tailored mental health support programs that include counseling, support groups, and psycho-educational sessions for patients, their husbands, and family members. Information about potential psychological consequences of hysterectomy and available support services should be disseminated through multiple channels, such as brochures and online groups, to facilitate early recognition and timely management. Moreover, in cases where the patient is of a young age, single, and has still not yet completed her family, she should be offered other treatment options instead of hysterectomy wherever possible. Our findings can help shape a targeted approach for future management of mental health issues in this vulnerable patient population. Lastly, it is suggested that future studies should also evaluate the effect of the type of hysterectomy on the mental health of such patients.

ETHICS APPROVAL

The study was approved by Baqai Institute of Health Sciences (Reference Number: FHM 74-2022) dated 21st September, 2022. All procedures performed in studies involving human participants were following the ethical standards of the institutional and/ or national research committee and the Helsinki Declaration.

CONSENT FOR PUBLICATION

Prior to data collection, verbal informed consent was taken from each participant of the study.

AVAILABILITY OF DATA

Data cannot be shared publicly because it is the intellectual property of Baqai Institute of Health Sciences. Data are available from the Baqai Institute of Health Sciences (contact *via* manager.mph@baqai.edu.pk).

FUNDING

No funding was sought for this study.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

Declared none.

AUTHORS' CONTRIBUTION

ABM: Study concept, designing, data collection and manuscript drafting.

SMZHN: Result analysis and interpretation, critical review, and revision of initial draft.

SIAJ: Critical review and revision of the initial draft.

UN: Data collection and revision of the initial draft.

All authors have read and approved the manuscript.

REFERENCES

1. American college of Obstetricians and Gynecologists. Hysterectomy. Available from: https://www.acog.org/womens-health/hysterectomy [Accessed: 17th February, 2023].
2. Abdelbaseer Mahmoud D, Fathi Elatar N, Ahmed Mostafa H. Effect of psycho-educational program on depressive symptoms, post-traumatic stress response and quality of life among women with hysterectomy. J Nur Sci Benha Univ 2022; 3(2):1165-87. DOI: https://doi.org/10.21608/jnsbu.2022.261045
3. 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(10): 366. DOI: 10.3390/jcm7100366 www.mdpi.com/journal/jcm
4. World Health Organization. Stress. Available from: https://www.who.int/news-room/questions-and-answers/item/stress [Accessed: 27th July, 2025].
5. American Psychological Association Dictionary of Psychology. Stress, Definition. Available from: https://www.apa.org/topics/stress [Accessed: 24th February, 2023].
6. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5. Washington, DC: American psychiatric association; 2013 May 22.
7. Alshawish E, Qadous S, Yamani MA. Experience of Palestinian women after hysterectomy using a descriptive phenomenological study. Open Nur J 2020; 14(1): 74-9. DOI: https://doi.org/10.2174/1874434602014010074
8. World Health Organization. Depression, Fact sheet. Available from: https://www.who.int/newsroom/factsheets/detail/depression [Accessed: 9th February, 2023].
9. Chou PH, Lin CH, Cheng C, Chang CL, Tsai CJ, Tsai CP. Risk of depressive disorders in women undergoing hysterectomy: A population-based follow-up study. J Psychiatr Res 2015; 68: 186-91. DOI: https://doi.org/10.1016/j.jpsychires.2015.06.017
10. Khan S, Khan S, Channa SR, Bawany MA. Depression and anxiety post total abdominal hysterectomy with bilateral salpingo-oophorectomy. Prof Med J 2020; 27(02): 217-24. DOI: https://doi.org/10.29309/TPMJ/2020.27.2.2338
11. Essa RM, Ismail NI, Hassan NI. Effect of progressive muscle relaxation technique on stress, anxiety, and depression after hysterectomy. J Nurs Educ Pract 2017; 7(7): 77. DOI: https://doi.org/10.5430/jnep.v7n7p77
12. 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(1): 9744. DOI: https://doi.org/10.1038/s41598-023-36838-2
13. American Psychological Association Dictionary of Psychology. Self-esteem, Definition. Available from: https://www.dictionary.apa.org/selfesteem [Accessed: 24th February, 2023].
14. Hayati E, Yarmohamadi F, Asadi M, Mohammadi M, Naghdi-Babaee S, Akbarnezhad H, *et al.* The relationship of sexual dysfunction disorders syndrome and body image with mental health in women. Chronic Dis J 2022: 121-4. DOI: https://doi.org/10.22122/cdj.v10i2.511
15. Gümüşsoy S, Öztürk R, Keskin G, Yıldırım GO. Effects of surgical and natural menopause on body image, self-esteem, and dyadic adjustment: A descriptive and comparative study. Clin Nurs Res 2023; 32(4): 712-22. DOI: https://doi.org/10.1177/10547738221114588
16. Tanzeem T, Mahmood Z. Development and validation of the psychosocial issues of hysterectomy cancer patient scale. Pak J Soc Res 2021; 3(3): 152-61. DOI: https://doi.org/10.52567/pjsr.v3i3.236
17. Syed TP, Devi R, Kumar R, Devi R. Hysterectomy: Indications and depression as adverse psychological consequence. J Pak Psychiatr Soc 2021; 18(3): 11-4. DOI: https://doi.org/10.63050/jpps.18.03.74
18. OpenEpi. Open Source Epidemiologic Statistics for Public Health. Available from: https://www.openepi.com/Calculator/calculator.htm [Accessed 30th September, 2022].
19. Psychology Foundation of Australia. Anxiety Stress Scales (DASS). Available from: https://www2.psy.unsw.edu.au/dass/ [Accessed 30th September, 2022].
20. University of Bristol. DASS 21 Scoring and Interpretation. Available from: https://www.bristol.ac.uk/media-library/sites/sps/documents/c-change/dass-twenty-one-scoring-and-interpretation.pdf [Accessed 30th September, 2022].
21. University of Maryland. Rosenberg Self Esteem Scale. Available from: https://socy.umd.edu/about-us/rosenberg-self-esteem-scale [Accessed 30th September, 2022].
22. Al-amer R, Atout M, Malak M, Ayed A, Othman WM, Saleh MY, *et al.* Prevalence and predictors of anxiety and stress among Jordanian women following hysterectomy: An observational multicentre study. BMC Psychol 2025; 13(1): 305. DOI: https://doi.org/10.1186/s40359-025-02623-1
23. Casarin J, Ielmini M, Cromi A, Laganà AS, Poloni N, Callegari C, *et al.* Post-traumatic stress following total hysterectomy for benign disease: An observational prospective study. J Psychosom Obstet Gynecol 2022; 43(1): 11-7. DOI: https://doi.org/10.1080/0167482x.2020.1752174
24. Bahri N, Tohidinik HR, Najafi TF, Larki M, Amini T, Sartavosi ZA. Depression following hysterectomy and the influencing factors. Iran Red Crescent Med J 2016; 18(1): e30493. DOI: https://doi.org/10.5812/ircmj.30493
25. Turan A, Karabayır HB, Kaya İG. Examining the changes in women's lives after the hysterectomy operation: Experiences of women from Turkey. Arch Womens Ment Health 2024; 27: 899-911. DOI: https://doi.org/10.1007/s00737-024-01419-3
26. Pinar G, Okdem S, Dogan N, Buyukgonenc L, Ayhan A. The effects of hysterectomy on body image, self-esteem, and marital adjustment in Turkish women with gynecologic cancer. Clinical J Oncol Nurs 2012; 16(3): E99. DOI: https://doi.org/10.1188/12.CJON.E99-E104