JSTMU Journal of Shifa Tameer-e-Millat University

https://j.stmu.edu.pk

Open Access

ORIGINAL ARTICLE

A cross-sectional study to explore depression in postmenopausal women

Fatima Khurshid[1*], Ahmed Nawaz Chatta[2], Mohammed Zain[3], Hina Aziz[4], Tanzeela Khalil Dar[5], Irum Saghir[6]

[1] Medical Doctor, Department of Medicine, Mohi-ud-Din Teaching Hospital, Mirpur AJK, Pakistan

[2] MBBS Student, Pak Red Crescent Medical and Dental College, Lahore. Pakistan

[3] District Medical Officer, Department of Health Card office, State Life Islamabad, Pakistan

[4] Medical Graduate, Department of Medicine, Fatima Jinnah Medical University, Lahore, Pakistan

[5] Medical Officer, Department of Medicine, Pakistan Airforce Hospital, Islamabad, Pakistan

[6] Disease Surveillance Officer, World Health Organization, Mirpur AJK, Pakistan

Author`s Contribution

[1] Study concept, design, data interpretation, manuscript writing
[2] Data analysis
[3] Critical revision
[4] Drafting of article
[5-6] Data collection

Article Info.

Conflict of interest: Nil
Funding Sources: Nil

Correspondence

Fatima Khurhid
fatimakhurshid61@yahoo.com

Article information

Submission date: 24-03-2024
Acceptance date:04-05-2024
Publication date: 30-06-2024

Cite this article as *Khurshid F, Chattha AN, Zain M, Aziz H, Dar TK, Saghir I, Tariq S, Ghazanfar T, Akbar U. A cross-sectional study to explore depression in postmenopausal women. JSTMU. 2024;7(1):61-67.*

A B S T R A C T

Introduction: The impact of depression on postmenopausal women is a significant public health concern but remains largely unknown. Menopause signifies the cessation of a woman's reproductive ability, indicating the halt of ovarian activity and leading to permanent amenorrhea. This organic change is associated with various symptoms including physical, vasomotor, sexual, and psychological elements. This cross-sectional survey was conducted to investigate the severity of depression in postmenopausal women and the factors that influence that depression.

Methodology: This study examined 240 women from the Gynae department of DHQ Hospital Mirpur, AJK, Pakistan. Data on menopausal symptoms and demographic traits was collected via structured interviews and Menopausal Rating Scale (MRS) questionnaires.

Results: The study revealed that 57% of participants experienced physiological symptoms such as hot flashes, sweating, heart discomfort, insomnia, and sleep problems. Psychologically, 39% experienced depressive mood, irritability, anxiety, and exhaustion. Urogenital, 60% experienced sexual problems, bladder issues, and vagina dryness. The severity of symptoms varied, with 5% reporting no symptoms, 77% reporting mild to moderate symptoms, and 18% reporting severe to extremely severe symptoms.

Conclusion: The study reveals that postmenopausal women often experience mild to moderate depression symptoms, emphasizing the need for personalized support and interventions to enhance their overall well-being.

Keywords: *Menopause, Depression, Anxiety, Menopausal Rating Scale, Menopausal symptoms.*

Introduction

Depression and anxiety are two key types of mental illnesses that have become substantial public health concerns around the world. Women were more likely than men to suffer from depressive and anxiety disorders after menarche, and women may be at an increased risk of depression and anxiety throughout times of hormonal swings such as puberty, pregnancy and postpartum, and the perimenopause stage.[1] Every woman has had a significant experience with her quality of life after menopause. During menopause, a woman's life expectancy increases by around one-third.[2] Menopause is defined by the occurrence of a 12-month amenorrhea, and post-menopause is the period that follows the final menstrual cycle. According to the Stages of Reproductive Aging Workshop +10 (STRAW) guidelines, this phase is separated into two stages based on hormonal levels: early and late post-menopause.[3] According to studies, depressive symptoms increase dramatically in the early

stages of menopause as compared to pre-menopause. Factors driving this rise include age at menopause, vasomotor symptoms, socioeconomic status, obesity, and a history of depression. While the prevalence of sadness during perimenopause is widely recognized, research on postmenopausal depression is limited.[4, 5]

Menopausal symptoms such as hot flashes, night sweats, cognitive fog, and sleep problems differ in strength and duration. Effective management entails tailored measures such as seeking medical advice, adopting good lifestyle choices, and investigating treatment options, which improve women's well-being throughout this transitional stage.[6-8] According to the Fawcett Society's 2022 research, over 77% of women in the UK have at least one menopausal symptom throughout the transition. The most common of these symptoms were heat flashes. Furthermore, the survey revealed that 44% of women going through menopause reported experiencing three or more severe symptoms.[8] According to research, menopausal symptoms cost the world $150 billion in diminished work productivity each year, affecting one in every three women. This emphasizes the need for increased awareness, support, and workplace adjustments in improving women's well-being and contributing to a more inclusive workforce.[9]

Women with severe menopausal symptoms usually exhibit more presenteeism and report greater difficulty at work than those without similar symptoms.[9] Previous research has shown that the prevalence and severity of vasomotor (VMS) and sexual menopausal symptoms are highly related to the stage of menopause. VMS symptoms appear to grow in prevalence and frequency as menopause approaches, with a peak in the late perimenopausal and postmenopausal years.[10] This could be attributed to hormonal changes or biological aging since a recent study discovered a link between age and the intensity of vasomotor and sexual symptoms. Reduced oestradiol levels and increased follicle-stimulating hormone (FSH), two commonly used menopausal markers, have been associated with an increase in the prevalence and severity of vasomotor and sexual symptoms, independent of age. Hormone replacement treatment (HRT) is usually effective in treating menopausal symptoms in the vasomotor and sexual domains reported by postmenopausal women. Recently, the literature has mostly emphasized the variations in vasomotor and sexual symptoms between menopausal stages; nevertheless, there is an increasing emphasis on psychological problems associated with the menopausal transition.[11, 12]

Over half of British women feel anxiety and sadness throughout the menopausal transition, and the link between these symptoms and menopausal phases is unclear. Some believe these symptoms are related to midlife difficulties such as marital conflict and caregiving. Perimenopausal women had an increased incidence of psychological complaints, although it is unknown if these issues resolve following the perimenopausal period. Women who have a history of severe depressive illness are more likely to acquire MDD during menopause. Postmenopausal women experience more severe depressive symptoms, however, there is no substantial change in the prevalence of depressed mood.[13, 14]

In a 2022 poll, 69% of British women assessed anxiety as a "very" or "somewhat tough" symptom of menopause.[8] Research on the association between depression and menopause is frequently disregarded, and anxiety measurements are frequently inadequate. This study seeks to identify the stage of the menopausal transition at which women are most vulnerable, as knowing and accepting these concerns may be useful. It also assesses psychological complaints, perceived stress, resilience, and self-efficacy, which are all linked to protective psychosocial characteristics.[15-18] The purpose of the study is to ascertain the degree to which women's menopausal quality of life is impacted by memory loss, emotions of hopelessness, and anxiety, as well as the relationship between resilience, self-efficacy, and low perceived stress.

Methodology

The study used a cross-sectional approach to evaluate postmenopausal depression and its risk variables. It was conducted at DHQ Hospital Mirpur AJK, where a large number of patients seek treatment for gynecological diseases daily. Participants in the study were drawn from a pool of people seeking medical care at DHQ Hospital Mirpur AJK using a traditional sampling approach. This strategy yields a representative sample of the population under study. The study included 45-60-year-old hospital

visitors. Participants have to be able to speak effectively in Urdu and demonstrate a willingness to engage in the study. The institutional review board gave the study ethical approval IRB Ref # 16. Ethical considerations included obtaining informed consent from participants, maintaining the confidentiality and privacy of participant information, ensuring voluntary participation with no repercussions, and adhering to the ethical guidelines and standards established by the study's ethical committee.

Women with major medical issues confirmed psychological diseases, a lack of Urdu communication skills, or an unwillingness to engage were all excluded. Participants were informed about the research objectives, procedures, and potential risks. Each subject provided informed consent before participating in the study. Data gathering included organized interviews in which we administered a questionnaire. The Menopausal Rating Scale (MRS) was used as part of the screening questionnaire to assess the severity of depression symptoms and other menopause-related symptoms reported by participants. The MRS, coupled with demographic data, contributed to a more complete picture of the individuals' experiences and allowed for a more thorough examination of postmenopausal depression.

The Menopausal Rating Scale (MRS) is a widely used questionnaire in studies on menopause and postmenopausal symptoms. It is a self-report tool designed to assess the intensity and impact of menopausal symptoms experienced by women. The MRS is composed of several items that assess the presence and severity of certain symptoms commonly associated with the menopause transition. Participants are asked to rank each symptom on a scale of 0 to 4, with higher ratings indicating more severe symptoms. Some versions of the MRS may also include sections to assess how menopausal symptoms affect daily life and overall well-being.[19]

The MRS questionnaire has been proven reliable and valid through previous research, demonstrating internal consistency and test-retest reliability. It accurately measures menopausal symptoms over time, with content validity due to comprehensive coverage of relevant symptom domains and construct validity due to its ability to differentiate between individuals with varying degrees of symptom severity. The questionnaire was administered through structured interviews, ensuring standardized data collection and obtaining ethical approval. Participants provided informed consent before participation. The statistical analysis was performed with IBM© SPSS© Statistics version 20.0. Descriptive statistics were used to summarize study participants' characteristics, demographic variables, and symptom severity levels.

Inferential statistics were used to explore significant differences or relationships in the data. Correlation analysis was conducted to examine associations between menopausal symptoms, including depression, and other variables. This rigorous analysis provided a comprehensive understanding of the severity of menopausal symptoms and their relationship to demographic factors.

Results

The data offered provides important insights into the participants' demographic parameters for menopause. Individuals between the ages of 46 and 50 make up the majority of participants (49%). The 41-45 age group comes in second, accounting for 13% of the participants. Notably, participants aged 35-40 years, 51-55 years, 56-60 years, and 61-65 years contributed to the study at 8%,13%, 5%, and 1%, respectively.

With regards to menopause age, the majority of respondents (59%) reported having it between the ages of 45 and 50. Other age groups were 35-40 (8%), 41-45 (15%), and 51-55 (18%). The bulk of responders (84%) reported being married. On the other hand, 16% were recorded as unmarried. When considering parity, it is clear that 81% of the participants had given birth to more than one child, making them multiparous. Conversely, 19% of respondents were classed as nulliparous, which means they had not given birth to any children. In terms of residency, the results show that 63% of participants lived in cities, with the remaining 37% in rural areas. Considering education level, 52% of participants were uneducated, while 23% had completed basic education, 6% had secondary education, 13% had a graduate degree, and 5% had a postgraduate degree.

When it comes to employment status, the data shows that the vast majority (73%) of participants are unemployed. In addition, 18% were employed, while 9%

had retired. These findings shed light on the demographic characteristics of the individuals in connection to menopause (Table 01). Variations in age groups, age at menopause, marital status, parity, domicile, education, and employment help to better understand the elements that may influence the participants' menopausal experience. Furthermore, it is vital to remember that some females underwent total abdominal hysterectomy due to fibroids and other gynecological disorders, which led to the early beginning of menopause.

Menopausal symptoms were examined in the research samples using MRS. The 11 symptoms on this scale were divided into three categories: urogenital, psychological, and physical. There was a significant difference between the three study groups, with menopausal women performing better in all domains, including urogenital, psychological, and physical.

A variety of physical and psychological impacts were observed when investigating the participants' complaints (Table 02). Starting with the physical symptoms, 57% of participants reported hot flushes and perspiration, making it one of the most common complaints. Many women associate this physiological reaction with menopause. Heart discomfort came closely behind, with 56% of respondents reporting it, which might show as palpitations or chest discomfort. Sleep disturbances were common among participants, impacting 57% of those assessed. Insomnia and interrupted sleep patterns are typical complaints during menopause, and they can have a major influence on daily functioning and quality of life.

Moving on to psychological symptoms, 39% of people reported having a depressive mood. This emotional component is critical to address because mood swings can have a substantial impact on mental health. Irritability, indicated by 46% of participants, and anxiety, affecting 53%, are additional relevant psychological symptoms to consider when determining the overall impact of menopause on mental health. Physical and mental exhaustion were prevalent, with 51% of respondents reporting this symptom. This weariness can be debilitating, interfering with everyday tasks and general quality of life. In terms of urogenital symptoms, 60% of participants reported sexual issues, emphasizing menopause's impact on sexual health.

Table 1: Demographics of the Participants

Characteristics	Frequency	Percentage
Age		
35-40 years	19	8
41-45 years	32	13
46-50 years	118	49
51-55 years	57	24
56-60 years	11	5
61-65 years	3	1
Age At Menopause		
35-40 years	19	8
41-45 years	36	15
45-50 years	142	59
51-55 years	43	18
Marital Status		
Married	202	84
Unmarried	38	16
Parity		
Nulliparous	46	19
Multiparous	194	81
Residence		
Rural	89	37
Urban	151	63
Education		
Uneducated	126	52
Primary	56	23
Secondary	15	6
Graduate	31	13
Post Graduate	12	5
Employment		
Unemployed	176	73
Employed	43	18
Retired	21	9

Bladder issues, reported by 62% of those polled, and vaginal dryness, reported by 61%, are frequent urogenital concerns that can emerge after menopause and have an impact on everyday comfort and quality of life. Joint and muscular soreness, described by 40% of respondents, is a symptom that can have physical and psychological consequences since it can impair movement and overall well-being. Through the provision of an elaborate analysis of every symptom category and the related frequency associated with it, we acquire a thorough comprehension

of the many experiences that participants have described about menopause

Table 2: Menopause Rating Scale: Symptoms experienced by the participants

Symptoms	Frequency (%)	Mean	Standard deviation
Hot flushes, sweating (p)	57%	2.7	0.931
Heart discomfort (p)	56%	2.8	0.711
Sleep problems (p)	57%	2.7	0.980
Depressive mood (psy)	39%	3.4	0.849
Irritability(psy)	46%	3.1	0.900
Anxiety(psy)	53%	2.9	0.986
Physical and mental exhaustion(psy)	51%	3.0	0.869
Sexual problems (u)	60%	2.6	0.962
Bladder problems(u)	62%	2.5	1.109
Dryness of vagina(u)	61%	2.5	0.836
Joint and muscular discomfort (p)	40%	2.5	0.743

Menopause Rating Scale (MRS) (P=Physiological, PSY=Psychological, U=Urogenital)

Using the Menopause Rating Scale to assess the severity of menopausal symptoms, the data demonstrates a range of symptom intensity experienced by individuals. Among the 240 respondents, 5% reported having no symptoms ranging between 0 and 11 on the scale, indicating a relatively low symptom burden for this group. The majority of patients (77% of the sample) had mild to moderate symptom intensity, scoring between 12 and 35 on the Menopause Rating Scale. This shows that the majority of respondents had noticeable but treatable symptoms in their daily lives, which could have a moderate influence on their quality of life.

A lower but significant proportion of participants (18%) had severe to very severe symptoms (score 36 or higher scale). This group certainly had major obstacles as a result of the severity of their menopausal symptoms, which may have had a significant influence on their overall well-being and everyday functioning (Table 3).

Table 3: Severity of menopausal symptoms experienced by the participants

Severity level	Frequency N=240 (%)
No symptom (≤11)	12 (5%)
Mild to moderate (12-35)	185 (77%)
Severe to very severe (≥36)	43 (18%)

Researchers and healthcare providers can better understand the distribution of symptom intensity among surveyed individuals by categorizing menopausal symptoms using the Menopause Rating Scale. This allows for tailored interventions and support strategies to address the diverse needs of menopausal women.

Discussion

Menopause is a significant phase of a woman's life that can have a substantial impact on her general well-being and quality of life. Understanding the frequency and severity of menopausal symptoms is critical for offering appropriate support and therapies to middle-aged women as they transition. In postmenopausal women, we aimed to ascertain the frequency and intensity of menopausal symptoms. The data showed that women suffered symptoms in a variety of categories, including somatic, psychological, and urogenital. These symptoms were reported more frequently in post-menopausal women, reflecting the difficulties they may experience during this period of life.

A majority of individuals (57%) reported hot flushes and perspiration as physical symptoms. This is consistent with a prior study on menopausal women,22 which highlighted the prevalent occurrence of vasomotor symptoms during this era. Heart discomfort, such as palpitations and chest pain, was also common among individuals (56%). Sleep problems, such as insomnia and disrupted sleep patterns, were reported by 57% of individuals. These findings highlight the difficulties that women confront when managing their physical health throughout menopause. Psychological symptoms were also prevalent in the study participants. A sizable percentage of participants reported sad mood (39%), irritation (46%), and anxiety (53%). These psychological symptoms have been widely linked to

the hormonal variations and life changes that accompany menopause.[23]

The high incidence of these symptoms emphasizes the necessity of treating mental health concerns in menopausal women and providing appropriate support and services. Urogenital problems were commonly mentioned by the individuals. 60% of the women experienced sexual issues, underscoring the importance of menopause for sexual health and well-being. 62% of the individuals reported bladder issues, such as urine frequency and incontinence. 61% of women reported vaginal dryness, which can cause discomfort and agony during sexual intercourse. Urogenital symptoms can have a substantial impact on menopausal women's quality of life and interpersonal interactions.[24]

The study evaluated women's perceptions of depression, anxiety, impaired memory, stress, resilience, and self-efficacy throughout the menopause. The findings revealed that early postmenopausal women experienced higher levels of stress and anxiety than postmenopausal women. Although age did not influence perceived anxiety or stress levels, women with poorer educational backgrounds and income reported higher levels of stress.[19] According to research, older persons have more coping resources, higher life satisfaction, and advanced emotional regulation skills, resulting in a greater sense of optimism and fewer psychological distress symptoms than younger adults.[10]

The differences between our study and previous research findings can be attributed to several factors, including socio-cultural characteristics, racial and genetic differences, individual perceptions of menopause, sample size variations, study designs, and measurement instruments. Geographic location can also have a role, as demonstrated by our study, in which a higher incidence of joint and muscle problems in one area may have contributed to higher scores on the Menopause Rating Scale questionnaire's physical domain. These characteristics demonstrate the complex and multifaceted nature of menopausal experiences, underlining the importance of considering several factors when analyzing study findings and outcomes.19 Racial disparities have an impact on menopausal symptoms' prevalence and severity, menopause's average age of onset, and menopause's duration, which leads to variations in the features of the research sample and accounts for the variations in menopausal severity. Moreover, women in different regions of the nation suffer the symptoms of menopause brought on by insufficient estrogen in different ways.[21]

One limitation of this study is that it may lack generalizability due to its geographic location and sample size. The findings may not be representative of menopausal women in other locations or cultural situations, and the small sample size of 240 individuals may limit the data' generalizability. Furthermore, the use of self-report measures, as well as the subjective nature of symptom reporting, raises the likelihood of recall bias and heterogeneity in individual interpretation. The study's cross-sectional methodology makes it difficult to establish causal links between menopausal symptoms and demographic characteristics. Lastly, the study did not go into great detail about the impact of cultural or socioeconomic factors on menopausal experiences. These limitations should be noted when interpreting the results, and they highlight the need for larger, more diverse research with longitudinal designs that include a broader variety of contextual factors.

Future studies should focus on longitudinal studies to understand menopausal symptoms over time. They should also explore intersectionality, considering factors like race, ethnicity, and health disparities. Intervention studies should evaluate the effectiveness of therapies and lifestyle interventions in managing menopausal symptoms. Technology-based solutions can be used to monitor and address symptoms, while community-based research can help address unique needs and challenges faced by women from different backgrounds. Collaborating with community organizations and healthcare providers can help address the unique needs and challenges faced by women from different backgrounds.

Conclusion

In conclusion, this study investigated the severity of depression in postmenopausal women and discovered a variety of physical and psychological symptoms related to menopause. The majority of patients had mild to moderate symptoms, with a smaller number experiencing severe

symptoms. The study sheds light on demographic determinants and emphasizes the importance of tailored support and treatments for postmenopausal women's well-being. To develop effective preventative and therapeutic measures, as well as to better understand the components that contribute to postmenopausal depression, further study is required.

Future research should explore the mechanisms behind postmenopausal depression, examine long-term trajectories of symptoms, identify effective preventive measures, and consider psychosocial factors. This will enhance our understanding of the condition and develop targeted interventions to improve women's mental health during this transitional period.

References

1. Wang X, Zhao G, Di J, Wang L, Zhang X. Prevalence and risk factors for depressive and anxiety symptoms in middle-aged Chinese women: a community-based cross-sectional study. BMC Womens Health. 2022; 22(1):319. DOI: https://doi.org/10.1186/s12905-022-01908-6.
2. Ahmadi N, Delavar MA, Mashayekh-Amiri S, Esmaeilzadeh S. Exploring the relationship between depression on menopausal symptoms and personality trails. Com Healt Equity Res Policy. 2023; 43(2):125-31. DOI: https://doi.org/10.1177/0272684X211004926.
3. Harlow SD, Gass M, Hall JE, Lobo R, Maki P, Rebar RW, et al. Executive summary of the Stages of Reproductive Aging Workshop+ 10: addressing the unfinished agenda of staging reproductive aging. J Clin Endocrinol Metab. 2012; 97(4):1159-68. DOI: https://doi.org/10.1210/jc.2011-3362
4. Papazisis G, Tsakiridis I, Ainatzoglou A, Pappa A, Bellali T, Kouvelas D, Dagklis T. Prevalence of post-menopausal depression and associated factors: A web-based cross-sectional study in Greece. Maturitas. 2022; 156:12-7. DOI: https://doi.org/10.1016/j.maturitas.2021.10.014.
5. Di Benedetto MG, Landi P, Mencacci C, Cattaneo A. Depression in Women: Potential Biological and Sociocultural Factors Driving the Sex Effect. Neuropsychobiology. 2024; 83(1):2-16. DOI: https://doi.org/10.1159/000531588
6. Nappi RE, Siddiqui E, Todorova L, Rea C, Gemmen E, Schultz NM. Prevalence and quality-of-life burden of vasomotor symptoms associated with menopause: A European cross-sectional survey. Maturitas. 2023; 167:66-74. DOI: https://doi.org/10.1016/j.maturitas.2022.09.006.
7. Mulhall S, Anstey K. Prevalence and severity of menopausal symptoms in a population-based sample of midlife women. Innovat Aging. 2018; 2(Suppl 1):711. DOI: https://doi.org/10.1093/geroni/igy023.2635
8. Fenton A, Panay N. Menopause and the workplace. Climacteric. 2014; 17(4):317-8. DOI: https://doi.org/10.3109/13697137.2014.932072.
9. Burden L. Women are leaving the workforce for a little-talked-about reason. Bloomberg UK. 2021; 18.
10. Kuck MJ, Hogervorst E. Stress, depression, and anxiety: psychological complaints across menopausal stages. Front Psychiatry. 2024; 15:1323743. DOI: https://doi.org/10.3389/fpsyt.2024.1323743.
11. De Villiers T. The management of vasomotor symptoms of menopause (VMS) with menopausal hormone therapy (MHT). Curr Opin Endocr Metab Res. 2022; 27:100420.
12. Hamoda H, Panay N, Pedder H, Arya R, Savvas M. The British Menopause Society & Women's Health Concern 2020 recommendations on hormone replacement therapy in menopausal women. Post Reprod Health. 2020; 26(4):181-209. DOI: https://doi.org/10.1177/2053369120957514.
13. Alblooshi S, Taylor M, Gill N. Does menopause elevate the risk for developing depression and anxiety? Results from a systematic review. Australas Psychiatry. 2023; 31(2):165-73. DOI: https://doi.org/10.1177/10398562231165439.
14. Willi J, Ehlert U. Assessment of perimenopausal depression: a review. J Affect Disord. 2019; 249:216-22. DOI: https://doi.org/10.1016/j.jad.2019.02.029.
15. Weidner K, Bittner A, Beutel M, Goeckenjan M, Brähler E, Garthus-Niegel S. The role of stress and self-efficacy in somatic and psychological symptoms during the climacteric period–Is there a specific association?. Maturitas. 2020; 136:1-6. DOI: https://doi.org/10.1016/j.maturitas.2020.03.004.
16. Lee J, Lee JE. Psychological well-being of midlife women: a structural equation modeling approach. Menopause. 2022; 29(4):440-9. DOI: https://doi.org/10.1097/GME.0000000000001933.
17. García-León MÁ, Pérez-Mármol JM, Gonzalez-Pérez R, del Carmen García-Ríos M, Peralta-Ramírez MI. Relationship between resilience and stress: Perceived stress, stressful life events, HPA axis response during a stressful task and hair cortisol Physiol Behav. 2019; 202:87-93. DOI: https://doi.org/10.1016/j.physbeh.2019.02.001.
18. Hedgeman E, Hasson RE, Karvonen-Gutierrez CA, Herman WH, Harlow SD. Perceived stress across the midlife: longitudinal changes among a diverse sample of women, the Study of Women's health Across the Nation (SWAN). Women Midlife Heal. 2018; 4:1-1. DOI: https://doi.org/10.1186/s40695-018-0032-3.
19. Heinemann K, Ruebig A, Potthoff P, Schneider HP, Strelow F, Heinemann LA, Thai DM. The Menopause Rating Scale (MRS) scale: a methodological review. Health Qual Life Outcomes. 2004; 2:1-8. DOI: https://doi.org/10.1186/1477-7525-2-45.
20. Masjoudi M, Amjadi MA, Leyli EK. Severity and frequency of menopausal symptoms in middle aged women, Rasht, Iran. J Clin Diagn Res. 2017; 11(8):QC17. DOI: https://doi.org/10.7860/JCDR/2017/26994.10515.
21. Chuni N, Sreeramareddy CT. Frequency of symptoms, determinants of severe symptoms, validity of and cut-off score for Menopause Rating Scale (MRS) as a screening tool: a cross-sectional survey among midlife Nepalese women. BMC Women Health. 2011; 11:1-9. DOI: https://doi.org/10.1186/1472-6874-11-30.
22. Ceylan B, Özerdoğan N. Menopausal symptoms and quality of life in Turkish women in the climacteric period. Climacteric. 2014; 17(6):705-12. DOI: https://doi.org/10.3109/13697137.2014.929108.
23. Poomalar GK, Arounassalame B. The quality of life during and after menopause among rural women. J Clin Diagn Res. 2013; 7(1):135. DOI: https://doi.org/10.7860/JCDR/2012/4910.2688.
24. Blümel JE, Arteaga E, Parra J, Monsalve C, Reyes V, Vallejo MS, et al. Decision-making for the treatment of climacteric symptoms using the Menopause Rating Scale. Maturitas. 2018; 111:15-9. DOI: https://doi.org/10.1016/j.maturitas.2018.02.010.