RESEARCH ARTICLE

DEPRESSION AMONG PERI- AND POST-MENOPAUSAL WOMEN: A REVIEW OF LITERATURE

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ABSTRACT

Varied evidenceshave been presented in literature about the link between menopause and depression. During menopausal transition, women experience uncomfortable symptoms due to the gradual depletion of the ovarian hormones. This hormonal imbalance predisposes peri- and post-menopausal women to the incapacitating depressive disorder which can adversely affect their behavior and way of life. The purpose of this systematic analysis of peer-reviewed literature is to explore the neurobiological and psychosocial factors that connect menopause and depression, as reported in studies in the past five years. Learning about these factors that contribute to depression during menopause can help women find ways to cope during this transitional stage. Health care practitioners should also be made aware that advice and counseling should be provided to women about the psychological effects of menopause. Further aims include educating women on how to manage the uncomfortable symptoms that can lead to depression. A clinical implication from this study is that women at this stage should be screened for depression to detect early symptoms of the disorder.

INTRODUCTION

Menopause is a physiological stage in a woman's life characterized by the "cessation of menstruation and reproductive ability" (Bener *et al*., 2017; Punia, Lekhan, & Punia, 2017). It is classified into *natural or spontaneous* and *sudden or induced*. Natural or spontaneous menopause occursif, at the time of menopause, the woman's ovaries and uterus are undamaged. Sudden or induced menopause, on the other hand, occurs when "there is a surgical removal of the ovaries, with or without hysterectomy" (Jamil & Khalid, 2016, p. 613). Menopause, as a transitional period in a woman's life, comes with a variety of neurobiological changes that women may not be prepared to experience. Reading about menopause and its symptoms does not compare to how a woman will feel when she experiences it. No one prepares them for the uncomfortable feelings and, worst of all, the depressive moods that come with it due to the combined effects of vasomotor symptoms and fluctuating amounts of the ovarian hormones. The severity of the symptoms that peri- and post-menopausal women experience varies. Some may experience vasomotor symptoms while others do not. Experiencing these uncomfortable changes in their body adversely affects women's quality of life. These physiological changes often result in changes in moods that can affect their personal and social relationships. The purpose of this review of literature is to explore the neurobiological, psychosocial, and sociodemographic factors that link menopause to depression. The review is also aimed at raising awareness among health professionals on the importance of giving advice to women about the adverse effects of menopause and how they can psychologically and physically prepare women at this transitional stage. Definitions of key terms in understanding the topic are provided in Table 1.

METHODOLOGY

The databases provided a great deal of references, but most of them are not pertinent to the present study. There were 41 references displayed on the search in Google Scholar, but only 6 of the articles are applicable to the topic being studied. I am primarily focusing on *depression* and *menopause* and not on other topics produced from the search. The keywords used in the search engines produced many references which did not show any relationship to the topic at hand. The references that came out of the search engine have the same key words as the ones in the search but did not show any relationship to the topic at hand. There were 4 out of 13 references in EBSCO Host, 4 out of 20 in Gale, and 3 out of 14 in Psych Info that are applicable to the study. Two out of the 15 references in ProQuest were applicable to the topic. The keyword *women* came out in most of the references but the more important key words like *menopause* and *depression* were lacking. Of the 19 relevant sources, 8 articles met the requirements of this review. A complete audit trail of the search process is documented in Table 2.

Analysis: The methodologies and findings of the articles included in the review arepresented in Table 3.The strengths, weaknesses, and gaps in literature are summarized in Table 4. Tables 5, 6, and 7 are used to consolidate literature findings on the three factors that can possibly link menopause to depression, namely: neurobiological factors, psychosocial factors, and sociodemographic factors.

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Table 1. Terms and Definitions Related to Depression and Menopause

Term	Definition
Cortisol	The stress hormone produced by the hypothalamic-pituitary-adrenal (HPA) axis (Gordon et al., 2016).
Depression	A common psychological condition experienced by women in the peri- and post-menopausal stage characterized by "gloomy mood, tearfulness, loss of interest in usual activities, weariness, sleep disturbance, and difficulty concentrating" (Jamil & Khalid, 2016, p. 612).
Estradiol (E2)	One of the three forms of estrogen, a female ovarian hormone (Gordon et al., 2016).
Menopause	A physiological stage in women's life characterized by the "cessation of a woman's reproductive ability" (Bener et al., 2017, p. 225).
	Menopause is "a period of transition from reproductive to non-reproductive stage of life" (Punia, Lekhan, &Punia, 2017, p. 873). It is classified as *natural/spontaneous,*if at the time of menopause, "the woman's ovaries and uterus are intact"; or *sudden/induced* if there was "a surgical removal of the ovaries with or without hysterectomy" (Jamil & Khalid, 2016, p. 612).
Peri-menopause	Also called *menopausal transition*. It is the "period of about 5-6 years transition from reproductively capable ovulatory menstrual cycles to the cessation of menstruation" (Gordon et al., 2016, p. 919). It is characterized by a decline in "the production of ovarian hormones, estrogen and progesterone" (Punia, Lekhan, &Punia, 2017, p. 874).
Post-menopause	The years after the cessation of menstruation period, whether natural or induced (Punia, Lekhan&Punia, 2017).
Vasomotor Symptoms (VMS)	A common symptom of menopause characterized by night sweats, hot flushes, sleep disturbances and mood changes (Freeman, 2015; Gordon et al., 2016).

Table 2. Audit Trail of Database Searches

Database	Dates Reviewed	Search Terms	Sources Found	Relevant Sources
EBSCO Host	2014 Jan. to 2019 Feb.	"menopause" and "depression"	13	4
Gale	2014 Jan. to 2019 Feb.	"menopause" and "depression"	20	4
Google Scholar	2014 Jan. to 2019 Feb.	"menopause" and "depression"	41	6
ProQuest	2014 Jan. to 2019 Feb.	"menopause" and "depression" and "women"	15	2
Psych Info	2014 Jan. to 2019 Feb.	"menopause" and "depression"	14	3

Table 3. Methodologies and Findings of Relevant Articles[1]

Authors, Publication Year, & Participants	Strengths, Weaknesses or Limitations, and Gaps	Direct Quotes
Bener et al. (2017) 1101 Qatari national and Arab women aged 45-65 years	**Strengths:** • The large sample size provided "sufficient power to examine interaction effects" (p. 230) **Weaknesses:** • The study is cross sectional and "subjects may be misclassified" (p. 230). • The study was done in a primary health clinic with the majority of the participants being Arab women who are in a higher educational and socioeconomic status and the results may not generalize to all women at this stage. • The participants were from "different geographic region of the country" and from a diverse race or ethnicity (p. 230). **Gaps:** • The authors suggested that "age at natural menopause is an important research issue because of the suspected links between it and risks of certain diseases" (p. 225).	Bener et al.'s (2017) findings "highlighted the importance of considering psychosocial factors, lifestyle, and chronic disease management in providing health guidance for peri-menopausal women and postmenopausal women to enhance their quality of life and reduce the risk of depressive and stress symptoms" (pp. 229-230). They also stressed that "there is a strong association between depression, anxiety, and stress symptoms… in menopause and postmenopausal women" (p. 230).
Freeman, E. W. (2015) Literature Review 105 articles in the references section	**Strengths:** • The author synthesized the information gathered about menopause and depression into an organized review. **Limitations:** • The reports on the "association between clinical depression and menopausal status are conflicting" and further studies need to be done "to determine whether the risk of diagnosed depression is increased around menopause" (p. 11). • According to the author, depression as a disorder includes different areas of study and the "review did not include intervention or neuroendocrine studies or in depth consideration of the many of the identified psychosocial, behavioral, and physical health factors that are important for understanding depression in midlife women" (p. 11). • 'The reviewed studies were from different cohorts and population samples" (p. 11). **Gaps:** • Although plenty of studies had suggested, "many potential risks factors and the role of changing hormone milieu associated with depressed mood around menopause", there are still no definitive answers about their connection (p.1).	According to Freeman's (2015) literature review, "these longitudinal studies in the general population consistently showed that depressive symptoms were greater in menopause transition compared to pre-menopause" (p. 11). The author further stressed that "accumulating data suggest that peri-menopausal depression is not simply due to low hormone levels, but that fluctuations or changes in hormone levels, which characterize the transition to menopause, may be endocrine triggers for peri-menopausal depression is [sic] women" (p. 5).

Gordon et al. (2016) 30 peri-menopausal women 62% Caucasian 31% African American 7% Asian aged 35-60 years	**Strengths:** • The authors made use of a structured methodology of testing for estradiol (E2) and cortisol in the saliva of the participants. • They also made use of more frequent E2 and mood assessments than the previous studies on the same topic. • The authors stressed this is "the first study of E2 fluctuation and mood to include currently depressed peri-menopausal women" and the "first to examine the hypothalamus-pituitary-adrenal (HPA) axis activation in relation to natural peri-menopausal E2 changes" (p. 932). **Weaknesses:** • There were only 30 participants in the study, which is a small sample size. They figured that "a larger sample size would allow for investigation of other factors that may moderate the relationship between E2, mood, and HPA axis activation" (p. 932). • The authors also suggested that future studies should make use of a "well validated and comprehensive affect scale" (p. 932). • A longer period of study, which means "a greater number of weeks would also increase the statistical power in detecting within person effects of E2 change" (p. 932). **Gaps:** • The authors mentioned that "despite the incredible burden that peri-menopausal depression places on millions of women, very little is known about the biological mechanisms underlying this etiology" (p. 920). • They also suggested that "peri-menopausal depression may differ somewhat from depression unrelated to reproductive events in its etiology" and further investigation should be done on this area of study (p. 931).	"Although increasing E2 predicted greater morning HPA activation in both women with current and past depression, the effect of increasing E2 on affective symptoms was only significant among the currently depressed women" (p. 931). "Frequent and persistent increases in E2 during menopause transition enhance HPA axis activation, which subsequently increases emotional and physiologic sensitivity to stressful life events and sets the stage for the development of depressive illness" (p. 931).
Jamil & Khalid (2016) 110 Pakistani women going through natural peri-menopause; aged 35-47 years	**Strengths:** • The authors "add to the existing body of research that examines sociocultural manifestation of menopausal symptoms in Pakistani women" (Jamil & Khalid, 2016, p. 620). • They also mentioned that "the results could be useful in conceptualizing and quantifying the health related quality of life of Pakistani women, particularly from a psychological or mental health perspective" (p. 620). • Their results "provide practical information to health professionals as well as clinical and counseling psychologists" (p. 620). **Weakness:** • None mentioned. **Gaps:** • "Most of the studies investigating the factors that influence menopausal symptoms in Muslim countries like Pakistan and Iran focus on factors such as attitudes towards menopause, education and socioeconomic background" but the "factors such as social support, physical activity, exercise, and relationship with one's husband have largely been ignored" (p. 613).	According to Jamil & Khalid (2016), "menopause is a natural biological phenomenon and a period of transition that every woman has to go through in her midyears….is characterized by the cessation of menstruation in women who have intact ovaries and uterus" (p. 612). "Depression is one of the common symptoms presented at menopause…. reflected in many ways like gloomy mood, tearfulness, loss of interest in usual activities, weariness, sleep disturbance, and difficulty concentrating" (p. 612).
Jung, Shin, & Kang (2015) 60,119 Korean women aged 35-74 years	**Strengths:** • The large population that gave enough power to items such as "association between age of menarche and depression" which were observed to have significant results (p. 134). • The information collected was through interviewers who were trained in standardized questionnaires. **Weaknesses:** • "The recalled information of previous hormonal events may be less accurate especially for the information on menarche" (p. 134). • Items that ask about "family history of depression or psychiatric drug usage" were not included in the Health Examinees Study (HEXA)(p. 134). • They excluded the women with unknown menopausal statuses, which could have a potential bias. **Gaps:** • The authors mentioned that "compared with the numerous findings regarding the age of menarche and depression, relatively few studies have focused on the association between menopausal age and depression" (p. 128).	"Menopause brings hormonal transitions as well as menarche, and it is known that people with depression in the post-menopausal period show decreased serotonin and estradiol concentrations that change the neurotransmitter activity in the central nervous system in women" (p. 128).

Kanadys et al. (2017) 268 peri-menopausal women in the city of Lublin, Poland aged 45-55years	**Strengths:** • "The project obtained a positive opinion from the Bioethics Committee at the Medical University at Lublin" (p. 21). **Weakness:** • None mentioned. **Gaps:** • "Although the problem was undertaken by many researchers, the relationship between states of depression and menopause has not been fully explained" (p. 20).	"Due to the occurrence of depression, women with poor material standards and low education level should be provided with special psycho-prophylactic care" (p. 23). The authors also stressed that "the factors which condition the development of depression are the following: social problems, educational level, occupational activity, past psychological problems, poor state of health, stressful life events, and previous living conditions" (p. 22).
Muharam et al. (2017) 133 female subjects from Indonesia aged 45-55 years	**Strengths:** • "The subjects were normal women without history of mood disorders, early menopause, and or surgical menopause" (p.30). • Another strength stressed in the study was that it was one of the few studies that "correlates menopausal symptoms to depression in Indonesian women" (p. 30). **Weakness:** • One limitation that the authors stressed was that "the data was only taken one time" which made it difficult to "identify mood changes before and after the menopausal transition" (p. 30). **Gaps:** • Although studies have shown a link between depression and menopausal transition, "it is still not clear whether the causation is strongly related or merely coincidental" (p. 27).	"Menopausal transition is a period of hormonal changes marked by declining of ovarian hormones production" (p. 29). "The chance of getting depression may be increased due to several aspects including adverse or stressful life events, surgical menopause, history of depressive mood disorder, and menopausal symptoms itself such as vasomotor symptoms" (p. 29).
Punia, Lekha, &Punia (2017) 400 eligible women, residing in the area of the primary health center (PHC), in Haryana, India aged 40-60 years	**Strengths** • Several strengths were mentioned by the authors, namely: "community-based study, randomly selected, fairly large sample size, menopausal rating scale, and widely used scale was employed in the study though it was modified to suit the local population" (p. 877). **Weaknesses:** • Some limitations of the study include: "most of the rural women were illiterate and … had difficulties in grading the symptoms as per menopausal rating scale" and there was a "comparatively large allowable error (10%)in the study" (p. 877). **Gaps:** • The authors mentioned that because "the quality of life of the increasing aging female population is now becoming an important issue … there is very little data on the menopausal problems especially from rural areas in Haryana to deal effectively with them" (p. 874).	"Natural menopause is recognized after 12 consecutive months of amenorrhea for which there is no obvious pathological or physiological cause" (p. 873). "Menopause become important for clinicians and health policy-makers as with general increase in life expectancy; women are likely to live more than 20 years after menopause in estrogen-deprived state with impaired quality of life due to menopausal symptoms" (p. 874). "Efforts are needed to educate and counsel these women to make them aware of various menopausal problems and available treatment options" (p. 877). "Health personnel … need to be trained and be made sensitive to the menopausal problems and give appropriate attention to improve the quality of life of aging women" (p. 877).

Table 5. Findings on Neurobiological Factors Linking Menopause to Depression

| Authors, Publication Year, & Participants	Findings
Freeman, E. W. (2015) Literature Review	• Although there is a fluctuation in the hormones of women in this stage, "only a minority experience debilitating depressive symptoms" (p. 9). • Depression is more prevalent in peri-menopause than pre-menopause. • There is evidence that endocrine milieu is associated with increased depressive symptoms. • Other factors aside from the endocrine milieu predisposes menopausal women to depression.
Gordon et al. (2016) 30 peri-menopausal women 62% Caucasian 31% African American 7% Asian aged 35-60 years	• "The greater weekly increases in excessive estradiol (E2) were associated with the increased cortisol among past and currently depressed women" (p. 919). • The negative mood of those who are currently depressed is related to the E2 increase. • "These findings provide evidence that hypothalamus-pituitary-adrenal (HPA) axis dysregulation, correlated with E2 fluctuation, may be implicated in the pathophysiology of peri-menopausal depression" (p.919).
Jung, Shin, & Kang (2015) 60,119 Korean women aged 35-74 years	• The age of menarche and menopause show increased likelihood of post-menopausal onset depression. • The age of menopause is a more important factor in the prevalence of depression. • They also stressed that women who experience early menopause or had an increased number of abortions should be assessed for depression.
Muharam et al. (2017) 133 female subjects from Indonesia aged 45-55 years	• Only 17 of the 133 subjects have depression. • Urogenital and somato-vegetative menopausal symptoms have significant correlations to depression. • "Future investigations should be conducted with a cohort design to observe mood alterations during the menopause transition" (p. 30).
Punia, Lekha, &Punia (2017) 400 eligible women, residing in the area of the primary health center (PHC), in Haryana, India aged 40-60 years	• Prevalent symptoms that "burden the menopausal women" are muscular pains, sleep problems, hot flushes, irritability, and bladder problems" (p. 876). • Most of the participants did not get any treatment for the symptoms and considered them as a "common phenomenon of post-menopausal period" (p. 877). • Education and counseling should be made available to menopausal women to learn about the available treatment options.

Table 6. Findings on Psychosocial Factors Linking Menopause to Depression

Authors, Publication Year, & Participants	Findings
Bener et al. (2017) 1101 Qatari national and Arab women aged 45-65 years	• Interpersonal protective factors that can protect against the onset of depression: ~ adequate social support • Other factors that can decrease the likelihood of depression: ~ lifestyle changes ~ chronic disease management
Jamil & Khalid (2016) 110 Pakistani women going through natural peri-menopause aged 35-47 years	• Factors that significantly lowered menopause-related depression: ~ higher physical activity level ~ satisfactory relationship with husband ~ availability of social support • Factors that did not contribute to menopausal depression in Pakistani sample: ~ attitudes towards aging and menopause ~ satisfaction with social supports ~ planned exercise
Kanadys et al. (2017) 268 peri-menopausal women in the city of Lublin, Poland aged 45-55 years	• Factors which condition the development of depression: ~ social problems ~ educational level ~ occupational activity ~ past psychological problems ~ poor state of health ~ stressful life events ~ previous living conditions • "Due to the occurrence of depression, women with poor material standards and low education level should be provided with specialpsycho- prophylactic care" (p. 23).
Muharam et al. (2017) 133 female subjects from Indonesia aged 45-55 years	• Factors that increases the chance of getting depression: ~ adverse or stressful life events ~ surgical menopause ~ history of depressive mood disorder ~ menopausal symptoms itself such as vasomotor symptoms

Table 7. Findings on Sociodemographic Factors Linking Menopause to Depression

Authors, Publication Year, & Participants	Findings
Bener et al. (2017) 1101 Qatari national and Arab women aged 45-65 years	• Predictors of depression: ~ age in years ~ diastolic BP ~ consanguinity ~ lack of regular exercise • Interpersonal protective factors: ~ adequate social support may protect against the onset of depression or may results in a more benign form of depression • Effective intervention for adults: ~ engaging in regular physical activity that may also serve as a buffer for the effect of stress on depression
Jamil & Khalid (2016) 110 Pakistani women going through natural peri-menopause aged 35-47 years	• Factors that affect the experience of menopausal symptoms: ~ education ~ socioeconomic status ~ physical activity
Kanadys et al. (2017) 268 peri-menopausal women in the city of Lublin, Poland aged 45-55 years	• Predictors of depression in peri-menopausal women: ~ poor material standard ~ lower education level. • Age and marital status did not determine the respondents' level of depression

DISCUSSION/FINDINGS

Figure 1. Factors that Link Menopause to Depression
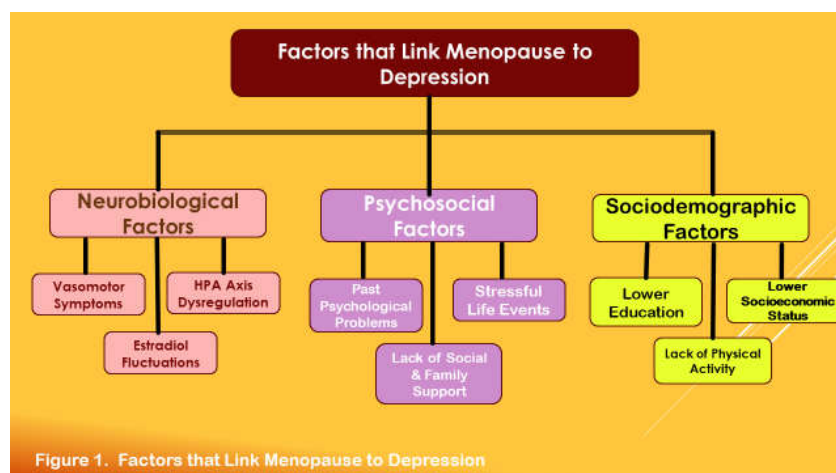
Menopause, being the cessation of a woman's menstruation and reproductive ability, comes with a variety of symptoms due to the physiological changes in the woman's body (Bener *et al*., 2017; Punia, Lekhan, &Punia, 2017). Some symptoms are easy to ignore while others may adversely affect a person's quality of life. Studies have shown that the symptoms of menopause may vary from one person to another. One of the life-changing symptoms that is commonlyassociated to menopause is depression. Menopausal depression has been a topic of many studies but the direct link between menopause and depression is still a big question in research. Although some studies consistently find similar results linking them, there are also conflicting results, which warrants more studies to confirm the link between menopause and depression. Three factors that link menopause to depression have been discussed in this review of literature, namely: neurobiological factors, psychosocial factors, and sociodemographic factors. The neurobiological factors associated to menopause and depression are shown in Table 5 and Figure1.These neurobiological factors are related to each other and can be traced from the depletion of the ovarian hormones estrogen and progesterone, particularly estradiol (E2), a form of estrogen. Vasomotor symptoms like hot flushes, night sweats, insomnia, and mood swings are neurobiological factors. Vasomotor symptoms were consistently identified as a predictor to menopausal depression (Freeman, 2015; Gordon *et al*., 2016; Muharam *et al*., 2017; Punia, Lekha, &Punia, 2016). Vasomotor symptoms result from the "changes in estrogen which is known to influence the thermoregulatory functioning" of the body (Freeman, 2015, p. 6).

Another consequence of the decline in the production of estrogen is the reduction of the serotonin activities in the brain, which contributes to depressive moods (Muharam *et al*., 2017). Another estrogen-depletion consequence that is linked to depression is the fluctuation of estradiol or E2 (Freeman, 2015; Gordon *et al*., 2016; Jung, Shin, & Kang, 2015; Muharam *et al*.). According to Gordon *et al*.'s (2016) findings, "an increased sensitivity to changes in E2 concentrations might increase a peri-menopausal woman's sensitivity to stress" which was found to be implicated to the development of peri-menopausal depression (p.920). This fluctuation in estradiol (E2) concentration can also lead to the dysregulation of the hypothalamus-pituitary-adrenal (HPA) axis (Freeman, 2015; Gordon *et al*., 2017). The changes in the amount of estradiol (E2) can activate the HPA axis to release the hormone cortisol. Cortisol is "central to regulating one's physiological and psychological response to stress" (Gordon, 2016, p. 920). Among the other biological factors that can be associated to depression are age of menarche and menopause (Jung, Shin, & Kang, 2015), muscular pains and bladder problems (Muharam *et al*.; Punia, Lekha, & Punia, 2016), and surgical menopause (Muharam *et al*.). Studies have shown that psychosocial factors have more effect on menopausal depressed mood than the endocrine changes (Freeman, 2015). The psychosocial link between menopause and depression includes past psychological problems, stressful life events, and lack of family and social support, which are factors shown in Table 6 and Figure 1. There were consistent findings from large cohort studies that identified past psychological problems, particularly depression, as thestrongest predictor of menopausal depression (Freeman, 2015; Gordon *et al*., 2016; Kanadys *et al*., 2017; Muharam *et al*. 2017; Punia, Lekha, &Punia, 2016). Women who have a history of depression have a greater probabilityof experiencingmenopausal depression than those who have not

experienced depression in the past (Freeman).Stressful life events can also add to the tendency of menopausal women to experience depressive symptomatology (Freeman; Gordon *et al*.; Kanadys *et al*.; Muharam *et al*.; Punia, Lekha, &Punia). Due to a woman's sensitivity to stress at this stage, a woman's vulnerability to depressive symptoms is greater when exposed to major life stressors or if she has a "genetic or personality predisposition to developing depression" (Gordon *et al*. 2016, p. 920). An important psychosocial factor that predisposes menopausal women to depression and can adversely affect relationships is the lack of social and family support (Jamil & Khalid, 2016; Kanadys *et al*.). Jamil and Kahlid found that a healthy relationship with one's husband "characterized by affection, understanding, companionship, care, and sensitivity during menopause" lessens the stress during this transition period (p. 614). In contrast, poor social and familial relationships can exacerbate mood symptoms during menopause. Additionally, Bener *et al*. (2017) stressed that women who have adequate social support have a lessened tendency to experience depression or experience a mild form of depression. The sociodemographic factors associated with menopausal depression, shown in Table 7and Figure 1, are lower education, lower socioeconomic status, and lack of physical activity. Lower education and lower socioeconomic status are the major sociodemographic predictors of developing menopausal depression (Jamil & Khalid, 2016; Kanadys *et al*., 2017). Women with higher education and socioeconomic status have more access to information, medical care, and a better awareness of the biological process happening during menopause. The lack of physical activity is another sociodemographic factor linked to menopausal depression. Engaging in physical activity has been found to be associated with positive effects on mood and menopausal symptoms, lessened stress level, and improved quality of life (Bener *et al*., 2017; Jamil & Khalid). Weight issues and drastic changes in bodily appearance are problems accompanyingmenopause, whichcan lowerthe women's self-esteem. Women who engage in regular physical activity maintain their weight, which helps them retain their self-esteem and eventually improve their moods (Jamil & Khalid). Other sociodemographic factors found to be associated to menopausal depression are age in years, diastolic blood pressure, and consanguinity (Bener *et al*).

Conclusions/Implications

The menopausal stage, peri- and post-menopause, is associated to a high risk of a major depressive disorder. The study confirmed that the development of depression at this stage is not dependent on one particular factor but can be traced to a combination of factors, each one contributing to the effects of the other. The imbalance on the ovarian hormones caused by the cessation of a woman's reproductive ability can trigger other biological activities which can be aggravated by the psychosocial and sociodemographic factors around the menopausal woman. Due to conflicting results in neurobiological studies, more studies are warranted to confirm the link between menopause and depression. Freeman (2015) suggested that the conflicting results are due to the differences in the "frequency and timing of the hormone measurements," the measures used for depressed moods, the comparison between the stages of menopause, and the methods of data analysis (p. 8). Women at this stage can benefit from depressive disorder screening. An early detection of this disorder can help the health and counseling practitioners

provide women with advice and intervention that can improve their quality of life. Health practitioners should "be trained and be made sensitive to menopausal problems" so that appropriate attention will be accorded to the aging population of women (Punia, Lekhan, &Punia, 2017, p. 877). Educating women and their family members about the physical and psychological effects of menopause can help in managing its symptoms. It had been found that a good support system around the menopausal woman can lessen the psychological burdens of this stage.

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REFERENCES

Bener, A., Saleh, N. M., Bakir, A., &Bhugra, D. 2016. Depression, anxiety, and stress symptoms in menopausal Arab women: Shedding more light on a complex relationship. *Annals of Medical Health Sciences Research, 6*, 224-231.

Cho, M.J., & Kim,K.H. 1993. Diagnosticvalidity of the CES-D [Korean Version] in the assessment of DSM-III-Rmajordepression. *Journal of Korean Neuropsychiatric Association, 32*,381–399.

Freeman, E. W. 2015. Depression in the menopause transition: Risks in the changing hormone milieu as observed in the general population. *Women's Midlife Health, 1*(2), 1-11. doi:10.1186/s40695-015-0002-y

Galvan, J. L.,& Galvan, M. C. 2017.*Writing literature reviews: A guide for students of the social and behavioral sciences*(7[th]ed.). New York, NY: Routledge.

Gordon, J. L., Eisenlohr-Moul, T. A., Rubinow, D. R., Schrubbe, L., & Girdler, S. S. 2016. Naturally occurring changes in estradiol concentrations in menopause transition predict morning cortisol and negative mood in peri-menopausal depression. *Clinical Psychological Science, 4*(5), 919-935.

Jamil, F., & Khalid, R. 2016. Factors contributing to depression during peri-menopause: Findings of a Pakistani sample. *Sex Roles, 75*, 612-622.

Jung, S. J., Shin, A., & Kang, D. 2015. Menarche age, menopause age, and other reproductive factors in association with post-menopausal onset depression: Results from Health Examinees Study (HEXA). *Journal of Affective Disorders, 187*, 127-135.

Kanadys, K., Wiktor, K., Bucholc, M., Robak-Cholubek, D., &Wiktor, H. 2017. Analysis of the level of depression in peri-menopausal women according sociodemographic characteristics. *Polish Journal of Public Health, 127*(1), 20-23.

Muharam, R., Setiawan, M. H., Ikhsan, M., Rizkinya, H. E., &Sumapraja, K. 2017. Depression and its link to other symptoms in menopausal transition. *Middle East Fertility Society Journal, 23*, 27-30. http://dx.doi.org/10.1016 / j.mefs.2017.08.003 111

Punia, A., Lekha, S., &Punia, M. S. 2017. Assessment of menopausal problems among rural women using modified menopause rating scale. *International Journal of Medical Science and Public Health, 6*(5), 873-878.

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