

Depression and Quality of Life among Postmenopausal Women in Bangladesh: A Cross-sectional Study

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Objectives: The aims of the research are to examine the problems of abnormal menopausal women: the relationship between depression and menopausal-specific quality of life (MENQOL)-symptoms among postmenopausal women; the association of MENQOL-symptoms between pre- and postmenopausal female society in Bangladeshi real community.

Methods: This cross sectional study was conducted on 435 women of Tangail, aged (≥ 17) years, using a structured questionnaire where is included the information of MENQOL and one of the main outcomes "depression" is measured by beck depression inventory.

Results: Menopausal status and MENQOL symptoms (except pain) are significantly ($P < 0.05$) associated. By using post-hoc analysis, the proportion of menopausal women, classified as having a depressive mood of early menopause is significantly higher than natural-menopause. Among postmenopausal women, there is a significant correlation between "concentration problem" and "depression". Here mean depression score (29.40 ± 6.42) of menopausal women who have any difficulty in concentrating is higher than mean depression score (20.89 ± 6.64) of menopausal women who have no difficulty in concentrating. Another six factors (osteoporosis, heart-beating, fatigue, pressure, tingling, headaches) of MENQOL-symptoms were significantly correlated with depression and P -values are 0.000, 0.000, 0.000, 0.033, 0.006, and 0.002, respectively. Finally the presence of "difficulty in concentrating" and "fatigue" are strongly associated factors with depression score ($P < 0.001$).

Conclusions: The early postmenopausal women have to face more psychological problems (e.g., depression) compare to others. Among postmenopausal women, there is no significant relation between depression and vasomotor symptom (e.g., hot-flashes) perspective to menopausal female society of Bangladesh. (**J Menopausal Med 2017;23:172-181**)

Key Words: Bangladesh · Depression · Menopause · Quality of life

Introduction

The quality of life (QOL) based on health-related issues is a multidimensional health concept that includes social, physical, and mental day-to-day functional areas of life.^{1,2}

Besides, it encompasses several significant domains like subjective well-being, role disability and psychological functions. Every woman has a significant experience of QOL after menopause. In menopause, a woman passes about a third of her own life with the heightening life expectancy.³

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All women recognize the term menopause in their life when their regular menstrual cycle has stopped for one year. So, menopause is a reproductive phenomenon.³ If menopause has happened in abnormal time then every women have to face much difficulties in QOL. It is also well known that every menopausal symptom have effect on QOL of pre and postmenopausal women. But it varies according to life style; vasomotor symptoms have lower impact on QOL of Asian menopausal women compare to western.^{4,5} In addition, North American and European menopausal women show higher rates of symptoms than Asian menopausal women.⁶ It is nicely showed that the reasons behind those differences were possibly cultural or genetically.⁶⁻⁸

The impact of menopause on QOL is a consequence of social, physical and mental changes. It is highly visible that socio-economic and cultural factors influence the menopausal transition.⁷ But it varies from region to region, country to country according to their culture. Like, in western countries, night sweating, hot flushes are the major menopausal symptoms of women but not in Asia.⁵ So the vasomotor symptoms as well as natural menopausal time have been varied from one cultural region to another. The 45 to 55 years range is called natural menopausal time of a women.⁹ But perspective to Bangladesh, 40 to 50 years range is treated as natural menopausal time.¹⁰ In the research work, before 45 years of a menopausal women treated as early postmenopausal candidate and after 50 years of a menopausal women is treated as late postmenopausal candidate. Every menopausal woman faces many psychological as well as physical problems.³ But premenopausal or postmenopausal women may be facing more or less difficulties of QOL. For menopause, postmenopausal women have to face indicative impacts on her social, daily and sexual life.^{11,12} Several health criteria like insomnia, tiredness, hot flashes, sweats, hair loss etc. are changed significantly in her body. Besides, having depressive mood among postmenopausal women is a subject of debate for decades. Postmenopausal women have more depressive mood which was found in earlier clinic based study.¹³ On the other hand, different community based study shows that depression is not more frequent in peri- or postmenopausal women.^{14,15}

Actually, depression is a crippling condition leads to indicative societal, personal and economic costs.¹⁶ A several

number of both prospective and cross-sectional studies have inquired a potential affiliation between the risks for depressive symptoms or major depressive disorder (MDD; new onset or recurrent) and distinguishable menopause staging.¹⁷ Bromberger et al.¹⁸ concluded in their study that transition of menopause considered as a vulnerable period to MDD recurrence, while two important risk factors (health factors and vasomotor symptoms) should be considered first lifetime-onset of MDD during midlife. Juang et al.¹⁹ also concluded that post- and perimenopausal women with hot flashes were affiliated with depressive and anxious symptoms in East Asian population.

But there are published very few articles by indicating QOL of menopausal women. In Southeast Asia²⁰ menopausal symptoms have not been excessively studied like Western countries. Perspective to developing country like Bangladesh, the documentations about menopausal women are very poor. In 2016, Ahmed et al.¹⁰ provided the information about QOL of menopausal women in Bangladesh. But they did not work on premenopausal women and there was not shown the relationship between pre- and postmenopausal women's altitude and QOL. Though this research is an advancement of Ahmed's work, the aim of this research is to examine the problems of abnormal menopausal women in a Bangladeshi real community and also investigate the relationship between pre and postmenopausal women's altitude and QOL. In addition, another major purpose of the present study was to examine whether the relationship between depression and menopausal-specific QOL (MENQOL) symptoms (vasomotor, psychological and physical) exists or not among postmenopausal women in Bangladesh.

Materials and Methods

1. Subjects and sample design

This cross-sectional study was conducted among rural women in Tangail district in Bangladesh. On the basis of area, Tangail district is the greatest district of Dhaka division and one of the central regions of Bangladesh. Also it is the second greatest district of Dhaka division by population. The study mainly adopted cluster sampling procedure in which villages were to be counted as a cluster. A total of

10 clusters were proposed for the survey. The clusters were selected using systematic probability proportionate to size sampling procedure. A total of 435 responders aged (≥ 17) years were collected. Actually sample size was determined by using,

$$n = z^2 [p(1-p)/d^2]$$

Where,

n = sample size

z = two-sided normal variate at 95% confidence level (1.96)

P = indicator percentage

d = precision.

By applying this formula the minimum required sample was 384. In this study, data were collected from 435 women by face to face interview method on the basis of a structured questionnaire. Interviews were conducted between participant and well-trained interviewer. Classification and menopausal definition of the data: In first stage of this study, we classified the total completed participants into two groups such as “premenopausal women” and “postmenopausal women”. This classification is defined according to other study conducted on women in Bangladesh.²¹ Premenopausal women indicated those women who had regular menstrual bleeding during last one year and postmenopausal women were defined as those who had ascertained that their last menstrual bleeding happened at least 1 year previously. Women were defined as perimenopausal if they had experienced irregular menstrual cycles within last 1 year or last menses to be 3 months previously but less than 12 months.

In second stage, postmenopausal women were classified in three groups concerning to our objectives. These were “Early postmenopausal women”, “Natural postmenopausal women”, “Late postmenopausal women”. Women were included in early postmenopausal group whose menstruation cycles stopped before 45 years old, whose cycles were stopped between 45 to 50 years old they were included in natural postmenopausal group and late postmenopausal women were indicated those women whose cycles were stopped after 50 years old. The classifications we made according to several studies.^{3,9,22}

Instruments and assessment of depression: The structured questionnaire was developed in 3 steps. In first step, the

study was included the information of the participants on the basis of socio-economic characteristics; in second step, we included the information of MENQOL;²³ in third step the information of depression were collected according to Beck depression inventory.²⁴ MENQOL consists of four domains i.e vasomotor, physical, psychological and sexual. It was applied in several worldwide studies like Thailand,²⁵ Europe,²⁶ Asian women.²⁷ Here we ignored sexual domain in our study because of reluctance of participants about these types of questions.

In Beck depression inventory, there were 21 questions. On the basis of these questions, four categories were developed (such as “no depression”, “mild depression”, “moderate depression” and “severe depression”). For our convenience, we made two categories (depressed and mild depressed). “Moderate depression” and “severe depression” were included in depressed group. “No depression” and “mild depression” were included in mild depressed group. Beck depression scale was converted in Bangla language which was approved by the doctor of Bangabandhu Sheikh Mujib Medical University (BSMMU). The study was approved by the local committees at the participating centers and “Bio-photomatix” Research and Ethics Committee, Mawlana Bhashani Science and Technology University.

2. Data cleaning

Data is inconsistent, noisy and incomplete in the existed world.^{28,29} Raw data is highly susceptible to missing values or inconsistency and affected the result analysis process. So, data cleaning is a mandatory step for mining or statistical analysis.^{30,31} At the primary stage we collected information from 435 women for the study. Then we excluded 23 data because of missing values. Also we ignored the data of perimenopausal women, divorced women and those women who had history of hysterectomy. We didn't get those women who had the case of surgical menopause during our data collection time. So our final participants were 346 women.

3. Statistical Analysis

For statistical analysis we have used SPSS for windows version 20 (SPSS Inc., Chicago, IL, USA). In this study, first descriptive results and χ^2 test for (2×2) table for the completed data were determined where all categorical variables

were dichotomous. Then we used χ^2 test of homogeneity and post-hoc test (also known as pairwise comparisons). Furthermore, bonferroni adjustment to correct multiple comparisons was included. We have also used point-biserial correlation and hierarchical regression in this research. All required assumptions were checked before and we considered $P < 0.05$ value as statistically significant result.

Results

1. Characteristics of the study population

The age range of total postmenopausal women was 40 to 90 years where the mean \pm standard deviation (SD) age was 60.78 ± 10.24 years and the age range of premenopausal women was 19 to 25 years with mean \pm SD age was 22.83 ± 1.12 . Among 206 postmenopausal women, 69 women had knowledge about menopause. Mean \pm SD age difference from their husband was 12.27 ± 4.17 which is not shown in the Table.

2. MENQOL symptoms

Table 1 represents frequencies of the menopausal symptoms and χ^2 value that represents the association of the symptoms between two groups (premenopausal women and postmenopausal women). Here 69.3% women are abided by muscle and joint pain among premenopausal women and 64.1% women are abided among postmenopausal women. Individual measures of association between menopausal status and all other symptoms except muscle and joint pain are significantly ($P < 0.05$) associated.

3. Depression in early (< 45) menopausal women

Table 2 shows the result of χ^2 test of homogeneity. It is explored that the proportional differences lie between three menopausal age groups i.e., early menopausal women (< 45 years), natural menopausal women (45–50 years), late menopausal women (> 50 years). On the basis of post-hoc analysis, the proportion of menopausal women classified as having depressive mood of early age at menopause was significantly higher than normal age at menopause, $P < 0.05$.

Table 1. Frequency distribution and association about menopause-specific quality of life questionnaire symptoms between premenopausal and post-menopausal women

	Premenopausal women (n = 140)	Postmenopausal women (n = 206)	χ^2
Depressive mood	35 (25.0)	168 (81.6)	109.94
Feeling tired	119 (85.0)	168 (81.6)	0.70
Feeling tensed or nervous	47 (33.6)	162 (78.6)	70.79
Difficulty in concentrating	77 (55.0)	153 (74.3)	13.89
Headache	47 (33.6)	140 (68.0)	39.69
Tingling	12 (8.6)	146 (70.9)	130.39
Hot flashes	11 (7.9)	138 (67.0)	118.87
Pressure or tightness in head	48 (34.3)	138 (67.0)	35.86
Heart discomfort	6 (4.3)	136 (66.0)	131.28
Sweating at night	10 (7.1)	132 (64.1)	111.66
Muscle and joint pain	97 (69.3)	132 (64.1)	0.355
Irritability	102 (72.9)	124 (60.2)	5.90
Sleeping problem	44 (31.4)	122 (59.2)	25.80
Excitable	51 (36.4)	122 (59.2)	17.324
Breathing difficulties	3 (2.1)	60 (29.1)	40.75

The data is presented as n (%)

Table 2. Comparisons about menopause-specific quality of life questionnaire symptoms among three groups of post-menopausal women

	Postmenopausal status		
	Early postmenopausal	Natural postmenopausal	Late postmenopausal
Vasomotor			
Hot flashes	41 (69.5)	52 (59.1)	45 (76.3)
Osteoporosis	42 (71.2)	61 (69.3)	43 (72.9)
Sweating at night	41 (69.5)	54 (61.4)	37 (62.7)
Psychological			
Depressive mood	54 (91.5)*	66 (75.0)*	48 (81.4)
Feeling tense or nervous	44 (74.6)	68 (77.3)	50 (84.7)
Concentration problem	48 (81.4)	63 (71.6)	42 (71.2)
Excitable	31 (52.5)	61 (69.3)	30 (50.8)
Irritability	35 (59.3)	58 (65.9)	31 (52.5)
Physical			
Fatigue	46 (78.0)	72 (81.8)	50 (84.7)
Insomnia	36 (61.0)	54 (61.4)	32 (54.2)
Heart beating quickly	35 (59.3)	60 (68.2)	41 (69.5)
Tightness in head	42 (71.2)	56 (63.6)	40 (67.8)
Numbing or tingling	40 (67.8)	58 (65.9)	48 (81.4)
Headache	43 (72.9)	58 (65.9)	39 (66.1)
Muscle & joint pain	44 (74.6) [†]	57 (64.8)	31 (52.5) [†]
Breathing difficulties	20 (33.9)	26 (29.5)	14 (23.7)

The data is presented as n (%)

*Significant difference $P < 0.05$ between early and natural postmenopausal

[†]Significant difference $P < 0.05$ between early and late postmenopausal

The proportion of women classified as having depressive mood at normal age of menopause was not significantly different with the late age at menopause, $P > 0.05$. Again the proportion of menopausal women classified as having muscle and joint pain of early age at menopause was significantly higher than late age at menopause, $P < 0.05$ and there was no significant proportional different between early age at menopause and normal age at menopause, $P > 0.05$.

4. Depressive mood effect on QOL among postmenopausal women

A point-biserial correlation has been run individually between Beck depression score and MENQOL symptoms of

menopausal women in Bangladesh. There are eight factors significantly ($P < 0.05$) correlated with depression which is shown in Table 3. Among them one factor is in vasomotor symptoms, one factor is in psychological symptoms and six factors are in physical symptoms. In vasomotor symptoms only osteoporosis is significantly ($P = 0.000$, $P < 0.05$) correlated with depression score. There were 146 women who have osteoporosis and their mean depression score (28.50 ± 6.87) was higher than mean depression score (24.07 ± 7.93) of 60 women who didn't have osteoporosis. In psychological symptoms, there was significant correlation between "difficulty in concentrating" and "depression", P -value is 0.000 ($P < 0.05$). Here mean depression score (29.40 ± 6.42) of meno-

Table 3. Correlation between depression score and menopause-specific quality of life questionnaire symptoms

	Depression score		
	Mean \pm SD	r	P value
Vasomotor			
Hot flashes		0.125	0.073
Yes	27.86 \pm 8.30		
No	25.88 \pm 6.94		
Sweating at night		0.065	0.357
Yes	27.57 \pm 7.10		
No	26.57 \pm 8.07		
Osteoporosis		0.271	0.000*
Yes	28.50 \pm 6.87		
No	24.07 \pm 7.93		
Psychological			
Feeling tense or nervous		0.056	0.424
Yes	27.43 \pm 7.25		
No	26.41 \pm 8.20		
Concentration problem		0.500	0.000*
Yes	29.40 \pm 6.42		
No	20.89 \pm 6.64		
Excitable		0.103	0.141
Yes	27.84 \pm 7.05		
No	26.29 \pm 7.96		
Irritability		0.052	0.457
Yes	27.52 \pm 7.49		
No	26.73 \pm 7.42		
Physical			
Fatigue		0.515	0.000*
Yes	29.03 \pm 6.54		
No	19.16 \pm 5.75		
Insomnia		0.153	0.028*
Yes	28.16 \pm 7.21		
No	25.83 \pm 7.64		
Heart beating quickly		0.271	0.000*
Yes	28.65 \pm 7.12		
No	24.40 \pm 7.35		

Table 3. Continued

	Depression score		
	Mean \pm SD	r	P value
Tightness in head		0.149	0.033*
Yes	27.99 \pm 6.97		
No	25.63 \pm 8.18		
Numbing or tingling		0.190	0.006*
Yes	28.12 \pm 7.37		
No	25.00 \pm 7.23		
Headache		0.218	0.002*
Yes	28.32 \pm 6.10		
No	24.85 \pm 8.08		
Muscle & joint pain		0.100	0.153
Yes	27.77 \pm 7.43		
No	26.22 \pm 7.46		
Breathing difficulties		0.088	0.207
Yes	28.23 \pm 7.59		
No	26.79 \pm 7.39		

*Significant
SD: standard deviation

pausal women who have difficulty in concentrating is higher than mean depression score (20.89 \pm 6.64) of menopausal women who have no difficulty in concentrating. Another six factors (heart beating quickly, fatigue, pressure or tightness in head or body, numbing or tingling, headaches) of physical symptoms are significantly correlated with depression score and *P*-values are (0.000, 0.000, 0.033, 0.006, 0.002) respectively. Total result of point-biserial correlation is shown in Table 3.

5. Relationship of depression, fatigue, concentration problem

We have carried out hierarchical multiple regression to ensure that which factors are severally consociated with the depression scores (Table 4). The several factors have been chosen which are individually correlated with depression score (Table 3). The presence of "difficulty in concentrating" and "fatigue" are strongly associated factors with depression score (*P* < 0.001). "Pressure or tightness in head or body"

Table 4. Hierarchical regression model of variables and their association with depression score of beck depression scale

Variable	Depression score			
	Model 1		Model 2	
	B	β	B	β
Constant	5.058		9.087 [†]	
Osteoporosis	1.687	0.103		
Difficulty in concentrating	5.042 [†]	0.296	5.212 [†]	0.306
Insomnia	0.325	0.021		
Fatigue	5.594 [†]	0.292	6.768 [†]	0.353
Heart beating quickly	1.260	0.080		
Pressure or tightness in head or body	-3.076 [*]	-0.194	-1.946	-0.123
Numbing or tingling	0.589	0.036		
Headaches	1.099	0.069		
R ²		0.344		0.317
Adjusted R ²		0.318		0.306
F		12.390 [†]		14.592
ΔF		12.390 [†]		1.662

**P* < 0.05

[†]*P* < 0.001

B: unstandardized regression coefficient, β: standardized regression coefficient, R²: squared multiple correlation coefficient, F: Fisher ratio

is also an associated factor with depression score. It is the result of model 1 in Table 4. In model 2 of Table 4, we have included only three factors which show significant association in model 1. The results are explored that two factors are strongly associated with depression score except “pressure or tightness in head or body”. Model 1 and Model 2 both are statistically significantly predicts the depression score (For model 1, *F* = 12,390; *P* = 0,000 and for model 2, *F* = 14,592; *P* = 0,000). The analysis of variance Table is not shown here.

Discussion

In this study, the mean ages of the early menopausal women, natural menopausal women and late menopausal women were 55.37 years, 62.75 years and 63.25 years respectively and the overall mean ± SD age of total menopausal women was 60.78 ± 10.24 years which is greater

than the other studies in other places^{21,32,33} across Bangladesh, in British women (50 ± 4.9 years),³⁴ and the age range of premenopausal women was 19 to 25 years with mean ± SD age was 22.83 ± 1.12. It is lower than other study conducted on rural women in Bangladesh (31,36 years).²¹ There are three groups of postmenopausal women in this study. Among them 59 women are in early (< 45 years) postmenopausal group, 88 women are in normal (45–50 years) postmenopausal group, 59 women are in late (> 50 years) menopausal group. Comparatively it is higher than the study of urban women of extreme northern India.³

From Table 1 we have got that postmenopausal women are more depressed than premenopausal women perspective to Bangladeshi women. This result is different from the study of Juang et al.¹⁹ as they revealed that depression is not associated with menopausal status and the study of Cheng et al.¹ found that fewer postmenopausal women had depression because of menopause and both study were conducted on middle aged women of Taiwan. On the other hand our find-

ings are also similar to other studies carried on in Bangladesh³³ and also other worldwide studies.^{16,18,35} So, depressive mood is a significant symptom for postmenopausal women compared to premenopausal women in case of women in Bangladesh.

On the other hand, no significant results have found in case of muscle and joint pain among menopausal symptoms perspective to Bangladeshi postmenopausal women compared to premenopausal women. In the study, the information of perimenopausal women was not included. But Islam et al.³⁶ included perimenopausal women in their study which was conducted on Bangladeshi women, got joint pain as significant symptoms for both perimenopausal and postmenopausal women compared to premenopausal women. In our study, we have got that 35.9% postmenopausal women and 21.4% premenopausal women have faced muscle and joint pain. But there was no significant proportional difference between two groups. Except muscle and joint pain, all other symptoms (vasomotor, psychological and physical) of QOL are significant for postmenopausal women compared to premenopausal women. This result shows similarity to other study of Asian countries like.^{3,7,33}

The study has determined proportional differences among three postmenopausal groups (early postmenopausal, natural postmenopausal and late postmenopausal) in case of MENQOL symptoms. Hence, the result also shows that early postmenopausal group has more depressed than natural postmenopausal group. With our best knowledge, this is the meaningful unique outcome and comparison among early three postmenopausal groups perspective to menopausal female society of Bangladesh. So, early postmenopausal women have to face so many difficulties in psychological (e.g., depressive mood) perspective. There is another significant proportional difference exist between early and late postmenopausal group with respect to muscle and joint pain.

In addition, it is also investigated that how depressive mood influence the QOL among postmenopausal women in the study. Juang et al.¹⁹ showed in their study that there is a significant relation between vasomotor symptoms and depressive mood. They seemed that night sweating may be caused of insomnia. That's why they confounded night sweating with insomnia in their analysis. In the study, we have used χ^2 test between insomnia and sweating at night

and have got insignificant ($P > 0.05$) result between them. So, sweating at night with insomnia is not confounded in our analysis. From Table 3 it can be said that there is no significant relationship between vasomotor symptoms (hot flashes, night sweating) and depressive mood. Though Juang et al.¹⁹ used hospital anxiety and depression scale (HADS) for measuring anxiety and depression score, while we have used Beck depression inventory for measuring depression of the participants. Another study said that there is strong positive relationship between depression and osteoporosis.³⁷ Any significant ($P = 0.073$) relationship between "hot flashes" and "depression" among postmenopausal women are not found in this research. Meanwhile, we have obtained significant relationship between osteoporosis and depression. So, perspective to Bangladeshi women, there is no significant relationship between "hot flashes" and "depression" among postmenopausal women.

The result of hierarchical regression have showed that fatigue and concentration problem are associated significantly with depression among postmenopausal women even after controlling all other factors (those were individually correlated with depression). In psychological point of view, there is relation between fatigue and depression,^{38,39} between concentration problem and depression.⁴⁰ Finally it can be concluded that there is strong association between fatigue and depressed postmenopausal women; between concentration problem and depressed postmenopausal women perspective Bangladesh. The findings show the similarities among the women of Kinmen island,² European women,⁴¹ Ecuadorian women,⁴² Italian women,⁴³ Canadian women,⁴⁴ Iranian women.⁴⁵

This study has some limitations like other cross sectional studies. Comparatively a small number of data were collected for the study. For large number of data from different places the frequency of QOL symptoms of menopausal women might be changed. The age range of premenopausal women was 19 to 25. Results might be changed for large age range of premenopausal women. The information about osteoporosis was not collected from premenopausal women.

Conclusion

On the basis of the study, it can be concluded that early postmenopausal women faced so many difficulties psychologically (e.g., depression). Among postmenopausal women depression is associated with fatigue and concentration problem. But there is no significant relation between vasomotor symptom (e.g., hot flashes) and depression perspective to rural postmenopausal women in Tangail district in Bangladesh. In addition, the final result suggested that psychological symptoms are strongly correlated with menopausal women and have significant impact on QOL of early postmenopausal women than late postmenopausal women perspective to Bangladesh.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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