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**Emotional Intelligence (EI) and Quality of Life (QoL) in perimenopausal women: A cross-sectional, community-based study from Ghana**

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**Abstract**

**Introduction:** The purpose of this study is to assess the influence of emotional intelligence (EI) on the quality of life (QoL) in menopausal women. The study further examines the moderating role of socio-demographic variables in the relationship between EI and QoL.

**Methods:** This cross-sectional study, employed a multi-stage sampling technique to sample 260 perimenopausal women from the Kumasi Metropolis for the study. The Menopause-specific Quality of life Questionnaire and Trait Emotional Intelligence Questionnaire were used to collect data after the validation of the instrument. The World Health Organization's definition for menopause was used as the base for the classification of menopausal status. Menopausal women with chronic physical and mental health conditions were excluded. Analyses were done using multivariate regression and HAYES process.

**Results:** The mean age of participants was 48.9, SD of 3.9. Of the perimenopausal women 65.8% had a basic education and 38.5% of them were married. Our study found a significant relationship between EI and QoL (Wilks' Lambda=.97,  $F(4, 249) = 12.19, p = .007$ ). Specifically,

EI positively predicted the psychosocial dimension of QoL. Further analysis revealed that marital status ('single', 'married', 'divorced' and 'deceased') and educational level ('basic', 'secondary' and 'tertiary level') did not significantly moderate the relationship between EI and QoL. Age, however, significantly moderated the relationship between EI and the psychosocial dimension of QoL, ( $b = 0.92$ ,  $CI95\%$  0.02 to 1.78).

**Conclusion:** EI positively predicts psychosocial aspect of QoL in Ghanaian women during menopause. Thus, menopausal women with high level of emotional intelligence (EI) are less likely to experience some psychosocial menopause-related issues. Strategies to improve emotional intelligence of women should be put in place in Ghana and other sub-Saharan countries to help women manage negative outcomes of the menopause transition for improving their QoL.

**KEYWORDS:** Menopause; emotional intelligence; Ghana; Quality of Life; women.

**TAKE-HOME MESSAGE:** Emotional intelligence is positively related to psychosocial aspect of quality of life in perimenopausal women in Ghana.

**Competing interests:** none declared

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## **INTRODUCTION**

Menopause occurs when ovarian follicular function loses its purpose resulting in a halt of menstrual period in 12 consecutive months, thereby preventing the woman from becoming pregnant naturally [1]. The menopause transition either occurs naturally or because of medical interferences such as disease, surgery, or chemotherapy [2, 3]. The age range for the occurrence of menopause is not the same globally, even though the transition is universal [4]. Dieting, lifestyle, and environmental differences may account for the age variability of this physiological process within and among women [5]. During menopause, physical, psychosocial, and other social changes may occur, thus affecting these middle-aged women. Changes during menopause include disturbance in sleep patterns, problems with menstrual flow, and changes in vaginal functions resulting in diminished interest for sexual activity, mood swings, hot flashes and night sweat [6]. Osteoporosis and higher heart disease risk have been described, which may affect psychosocial functioning of menopausal and post-menopausal women, as well as their Quality of Life (QoL) [7]. In case of certain physical health complications, the psychosocial consequences may seriously affect their daily living activities, by compromising the QoL [8–10]. QoL has been defined by the World Health Organization as the “individuals’ perceptions of their position in life in the context of the cultural and value systems in which they live and in relation to their goals, expectations, standards, and concerns” [11]. In general, scholars have found that the most significant changes in these women concerned the physical and psychosocial domains of the QoL [12]. However, some studies reported no adverse changes in QoL among menopausal women [13]. The changes associated with menopause can be a barrier to the accomplishment of the

Sustainable Development Goal (SDG) 3, whose target is safeguarding ‘healthy lives and encourage well-being for all at all ages’ [14]. Some medical and psychosocial interventions have been put in place to fight the negative outcomes associated with menopause, yet their effectiveness has been proved only for some limited aspects such as the physical, vasomotor, and sexual ones [15, 16]. Emotional Intelligence (EI) is a well-known construct of positive psychology that has been associated with a variety of individual and social resources, such as resilience, positive self-evaluation, and social support [17]. Only a few studies have shown the positive impact of EI on menopausal women’s QoL [18–20], but only on physical, psychological, and social domains of QoL [20]. Furthermore, previous studies on this issue were carried out in clinical settings (i.e., hospitals or clinics). Unfortunately, in Ghana women with menopause-associated problems present to the hospital very rarely. For this reason, community-based studies on this topic in Sub-Saharan countries could be useful. Some demographic characteristics including age, marital status and level of education, tend to influence the QoL of menopausal women. Indeed, the onset of menopause at an earlier age tend to affect QoL more negatively [21], whereas women who are married and with higher levels of education tend to cope better with menopausal-related symptoms, thereby having a better QoL [22, 23]. Some studies showed different levels of emotional intelligence with regards to age, marital status, and level of education. More specifically, EI increases with age [24], being married [25] and having high educational levels [26]. Therefore, this study aimed to analyze how EI can affect QoL, and the moderating role of age, marital status, and educational level on this relationship, in menopausal women living in an urban area of Ghana.

## **METHODS**

### ***Study design and population***

A cross-sectional design was used for this study. The target population was all perimenopausal women (aged 40-60) living in Kumasi Metropolis, the Ashanti Region of Ghana. ‘Santasi’ community was randomly selected from a group of cities located in the Kumasi Metropolis, because it is a good representation of the cities from this region, as ‘Santasi’ is a multi-ethnic and multi-cultural community with people from varied socioeconomic background. The study was carried out from February to April 2019.

### ***Study sampling and procedures***

A multi-stage sampling technique was employed, with a combination of simple random sampling and convenient sampling techniques. Criteria of inclusion for study participants were: All perimenopausal (with the absence of menstrual flow 6-12 months) women (aged 40-60) from the study area. Criteria of exclusion were: Women with medical disorders (e.g., diabetes, hypertension, cardiac disease, and thyroid disorders), women affected by psychological or psychiatric disorders, and those who did not give their consent to participate in the research. Criteria for inclusion/exclusion and sampling procedures were drawn from previous research on this topic [27]. In this study, the sample size used was calculated by using the following formula:

$$N = 4pq/l^2 \text{ [28].}$$

Where p = proportion in the population possessing the characteristic of interest

q = (p-1) and l = acceptable error

Taking 80% prevalence of vasomotor symptom [29] with acceptable error of 5% at 95% confidence interval (CI), the sample 240 was achieved. 10% of non-respondents, was considered. 264 was the actual sample size used.

### ***Study instruments and measures***

In this study, emotional intelligence was the independent variable; quality of life was the dependent variable. Age, marital status, and educational level were moderating variables.

#### *Quality of life*

Menopause-specific Quality of Life Questionnaire (MENQoL), which was developed and validated by Hilditch et al. [30] was adopted in this study. MENQoL is a standardised questionnaire which comprises 29 items. This tool is a multi-dimensional scale with 4 sub-dimensions, i.e., vasomotor (items 1-3), psychosocial (items 4-10), physical (items 11-26) and sexual (items 27-29). The questionnaire was divided into two folds; the first part of the items indicated the presence or absence of the symptom (YES/NO answer). Afterwards, those with 'YES' responses rated the degree of symptoms on a point scale from '1' ('not bothersome') to '6' ('extremely bothersome') and items with 'NO' response were given zero on the bothersome scale. Technically, the first part of the scale operated on a dichotomous response (i.e., 'YES' or 'NO') with a reliability estimate of .81. The second half of the scale was on an ordinal basis with responses ranging from 1-6, as earlier mentioned. The final score for each domain was given by the arithmetic mean of the item scores forming that domain. Classification of symptoms as mild, moderate or severe was calculated with the following scores: mild (1-2), moderate (3-4) and

severe (5-6). Women with mild severity were considered as having a high QoL, moderate severity as having an average/moderate QoL and those with severe symptom severity were considered as having a low QoL [12]. Reliability for the overall questionnaire was .86 and .66, .52, .73, and .60 for vasomotor, physical, psychosocial and sexual domains, respectively, using Cronbach Alpha.

### *Emotional intelligence*

The Trait Emotional Intelligence Questionnaire Short-form (TEIQue-SF), which was developed and validated by Pertrides and Furnham [31], was adopted in this study. The scale was validated using confirmatory factor analysis before it was used for this study. TEIQue-SF is a 30 items questionnaire, covering four domains, such as emotionality, wellbeing, sociability, and self-control, where each item is rated with a Likert system from '1' ('disagree completely') to '7' ('agree completely'). The scores from each item are added up and divided by the number of items on the instrument to get a score for each participant. The final scores (means of mean) were categorized as low EI (1.0-3.9), average EI (4.0-5.9) and high EI (6.0-7.0). The Cronbach Alpha for the study was .73, thus indicating a good reliability score.

### *Ethical aspects*

Ethical clearance (ref. CES-ERB/UCC/EDU/V3/19-12) was taken from the Institutional Review Board (IRB) of the University of Cape Coast. A consent form was signed by each participant before the study. Confidentiality, anonymity, the privacy of respondent and responses were considered.

### ***Data analysis***

The analysis of data was done after the normality assumptions have been met. Q-Q plot was used to check for normality. Multivariate multiple regression was carried out for studying the impact of EI on QoL, while the moderating role of socio-demographic factors was investigated through moderation analysis using HAYES process. For the moderation analysis, 5,000 bootstrap samples were used.  $P < 0.05$  was considered as significant.

## **RESULTS**

### ***Socio-demographic characteristics***

Majority of the enrolled participants participated in this study. The final sample size of 260 was used after 4 participants opted out of the study. The mean age of our study sample was 48.9, SD of 3.9. 38.5% of respondents were married and 65.8% of them reported having basic education.

**Table 1.** Socio-demographic characteristics of participants ( $n = 260$ ).

<b>Variables</b>	<b>No.</b>	<b>Percentage</b>
Age (years)		
40-45	34	13.1
46-54	128	49.2
55-60	98	37.7
Marital status		
Single	13	5.0
Married	100	38.5
Divorced	63	24.2



Widow	84	32.3
Educational level		
Basic	171	65.8
Secondary	74	28.5
Tertiary	15	5.7

The results in Table 2 showed a moderate/average level of quality of life in the psychosocial, vasomotor, physical, and sexual domain. Menopausal women had a low emotional intelligence level. Therefore, based on our results, menopausal women in our sample had a low emotional intelligence level with an average quality of life.

**Table 2.** Emotional Intelligence and quality of life levels in study participants ( $n = 260$ ).

<b>Items</b>	<b>Mean values</b>	<b>Std. Deviation</b>	<b>Max.</b>	<b>Min.</b>
Vasomotor	3.60	0.87	3.84	3.60
Psychosocial	4.05	0.71	4.51	3.18
Physical	3.96	0.41	4.22	3.30
Sexual	3.38	0.73	3.64	3.32
Emotional intelligence	3.77	0.42	4.26	3.30

*H<sub>1</sub>: Emotional intelligence is positively and significantly related to the menopause-specific quality of life*

The results in Table 3 showed a statistically significant relationship between EI and QoL (Wilks' Lambda = .97,  $F(4, 249) = 12.19$ ,  $P = .007$ ).

**Table 3.** Multivariate Tests of the relationship between EI and QoL.

Effect		Value	F	Df	Error df	Sig.
Intercept	Pillai's Trace	.264	22.3	4.0	249	.000
	Wilks' Lambda	.737	22.3	4.0	249	.000
	Hotelling's Trace	.358	22.3	4.0	249	.000
	Roy's Largest Root	.358	22.3	4.0	249	.000
CSTEIQue	Pillai's Trace	.034	12.1	4.0	249	.007
			9			
	Wilks' Lambda	.97	12.1	4.0	249	.007
			9			
	Hotelling's Trace	.035	12.1	4.0	249	.007
			9			
	Roy's Largest Root	.035	12.1	4.0	249	.007
			9			

Note: CSTEIQue = Composite score for Trait Emotional Intelligence Questionnaire

As shown in Table 4, emotional intelligence positively and significantly predicted psychosocial dimension of QoL ( $b = .303$ ,  $t = 1.9$ ,  $P = .005$ ), i.e., when emotional intelligence is increased by 1 unit, psychosocial dimension of quality of life will increase by .30.

**Table 4.** Parameter estimates for the relationship between EI and QoL.

Criterion Variable	Parameter	B	Std.	T	Sig.
			Error		

VASOMOTOR	Intercept	.241	.818	.295	.768
	CSTEIQue	.525	.216	2.44	.016
PSYCHOSOCIAL	Intercept	1.86	.585	3.17	.002
	CSTEIQue	.303	.054	5.61	.005
PHYSICAL	Intercept	3.16	.338	9.36	.000
	CSTEIQue	-.002	.089	-.017	.987
SEXUAL	Intercept	6.89	2.05	3.37	.001
	CSTEIQue	.477	.539	0.89	.377

CSTEIQue = Composite score for trait emotional intelligence questionnaire

*H<sub>2</sub>: Marital status significantly moderates the relationship between emotional intelligence and quality of life of menopausal women*

As indicated in Table 5, marital status did not significantly moderate the relation between EI and the psychosocial dimension of QoL. Similar results were also found for the psychosocial, physical, and sexual dimensions of QoL.

**Table 5.** Moderation effect of marital status on the relationship between emotional intelligence and quality of life ( $n = 249$ ).

Dimension	Variables	<i>b</i> -value	<i>BSE</i>	<i>t</i> -value	95% CI	
					<i>BLLCI</i>	<i>BULCI</i>
Vasomotor (Model 1)	Constant	-1.09	6.18	0.18	-16.91	-9.39
	X on Y	0.78	1.63	0.48	-2.16	4.79
	W1 on Y	-1.21	6.33	-0.19	-12.04	14.79
	W2 on Y	2.87	6.48	0.44	-8.27	18.78
	W3 on Y	2.77	6.30	0.44	-7.82	18.71
	X*W1 on Y	0.44	1.68	0.26	-3.63	3.48
	X*W2 on Y	-0.63	1.71	-0.37	-4.65	2.48
	X*W3 on Y	-0.63	1.67	-0.38	-4.65	2.33

Psychosocial (Model 2)	Constant	1.19	2.81	0.42	-3.83	-8.07
	X on Y	0.47	0.73	0.64	-1.26	-1.84
	W1 on Y	-1.69	3.03	-0.56	-8.49	3.75
	W2 on Y	3.75	3.11	1.21	-3.16	9.13
	W3 on Y	0.41	2.96	0.14	-6.44	5.91
	X*W1 on Y	0.49	0.79	0.62	-0.97	2.22
	X*W2 on Y	-0.96	0.81	-1.18	-2.43	0.81
	X*W3 on Y	-0.15	0.77	-0.19	-1.59	1.59
Physical (Model 3)	Constant	4.12	3.98	0.42	-5.79	-10.01
	X on Y	-0.29	1.08	0.64	-1.85	2.39
	W1 on Y	-2.66	4.02	-0.56	-8.65	7.37
	W2 on Y	0.14	4.01	1.21	-5.81	10.00
	W3 on Y	-0.28	4.03	0.14	-6.35	9.70
	X*W1 on Y	0.76	1.09	0.62	-1.93	2.36
	X*W2 on Y	-0.01	1.09	-1.18	-2.64	1.61
	X*W3 on Y	0.10	1.09	-0.19	-2.58	1.73
Sexual (Model 4)	Constant	30.51	19.76	1.54	-20.24	-54.81
	X on Y	-6.45	5.29	-1.22	-13.47	6.75
	W1 on Y	-29.00	20.03	-1.45	-54.39	22.59
	W2 on Y	-19.83	20.43	-0.97	-46.27	31.76
	W3 on Y	-21.69	19.91	-1.09	-46.69	29.65
	X*W1 on Y	8.44	5.37	1.57	-4.98	15.68
	X*W2 on Y	5.78	5.48	1.05	-7.68	13.23
	X*W3 on Y	6.56	5.34	1.23	-6.75	13.73

Note: Model 1-4: W1 – Married; W2 – Divorced; W3 – Deceased; Comparison group – Single

*H<sub>3</sub>: Educational level significantly moderates the relationship between emotional intelligence and quality of life of menopausal women.*

The results in Table 6 indicate that level of education is not a significant moderator in the relationship between EI and all the aspects of menopause specific QoL.

**Table 6.** Moderation effect of educational level on the relationship between emotional intelligence and quality of life.

Dimension	Variables	<i>b</i> -value	<i>BSE</i>	<i>t</i> -value	95% CI	
					<i>BLLCI</i>	<i>BULCI</i>
Vasomotor (Model 1)	Constant	-2.38	2.31	1.03	-7.06	2.09
	X on Y	1.22	0.62	1.98	0.02	2.46
	W1 on Y	2.89	2.56	1.13	-2.14	8.05
	W2 on Y	4.69	2.89	1.62	-0.89	10.62
	X*W1 on Y	-0.76	0.68	-1.11	-2.12	0.58
	X*W2 on Y	-1.23	0.77	-1.59	-2.83	0.25
Psychosocial (Model 2)	Constant	-1.29	1.95	-0.67	-5.15	-2.69
	X on Y	1.19	0.53	3.75	0.12	2.27
	W1 on Y	3.31	2.14	1.55	-0.91	7.47
	W2 on Y	4.04	2.44	1.65	-0.84	8.95
	X*W1 on Y	-0.96	0.58	-1.65	-2.08	0.18
	X*W2 on Y	-1.11	0.66	-1.69	-2.44	0.19
Physical (Model 3)	Constant	1.73	1.10	1.57	-0.25	-4.11
	X on Y	0.39	0.29	1.33	-0.25	0.93
	W1 on Y	1.94	1.19	1.62	-0.56	4.16
	W2 on Y	1.64	1.28	1.28	-1.01	4.06
	X*W1 on Y	-0.52	0.31	-1.63	-1.11	0.15
	X*W2 on Y	-0.46	0.34	-1.32	-1.10	0.26
Sexual (Model 4)	Constant	8.59	6.09	-1.41	-2.38	-21.47
	X on Y	-0.05	1.68	-0.02	3.71	2.92

W1 on Y	-0.55	1.19	-0.08	-14.09	11.51
W2 on Y	-3.72	1.28	-0.94	-18.88	11.13
X*W1 on Y	0.31	0.31	0.17	-2.91	4.10
X*W2 on Y	0.91	0.34	0.43	-3.10	5.14

W1 – Secondary; W2 – Tertiary; Comparison group – Basic

*H4: Age significantly moderates the relationship between emotional intelligence and quality of life of menopausal women.*

As shown in Table 7, age does not moderate the relationship between EI and the physical, vasomotor, and sexual dimensions of QoL. For psychosocial domain, our results reveal that interaction between the 55 – 61 years age group (moderator) and emotional intelligence (predictor variable) is a significant predictor of psychosocial dimension of quality of life ( $b = 0.92$ , 95% Confidential Interval (CI) from 0.02 to 1.78). Therefore, any additional increase in emotional intelligence will lead to extra 0.92 of (psychosocial) quality of life for women between 55- 61 years more than for women between 40-45years. Therefore, as EI increases, the psychosocial dimension of QoL increases as well, but this does happen particularly in 55-61 aged women.

**Table 7.** Moderation effect of age on the relationship between emotional intelligence and quality of life.

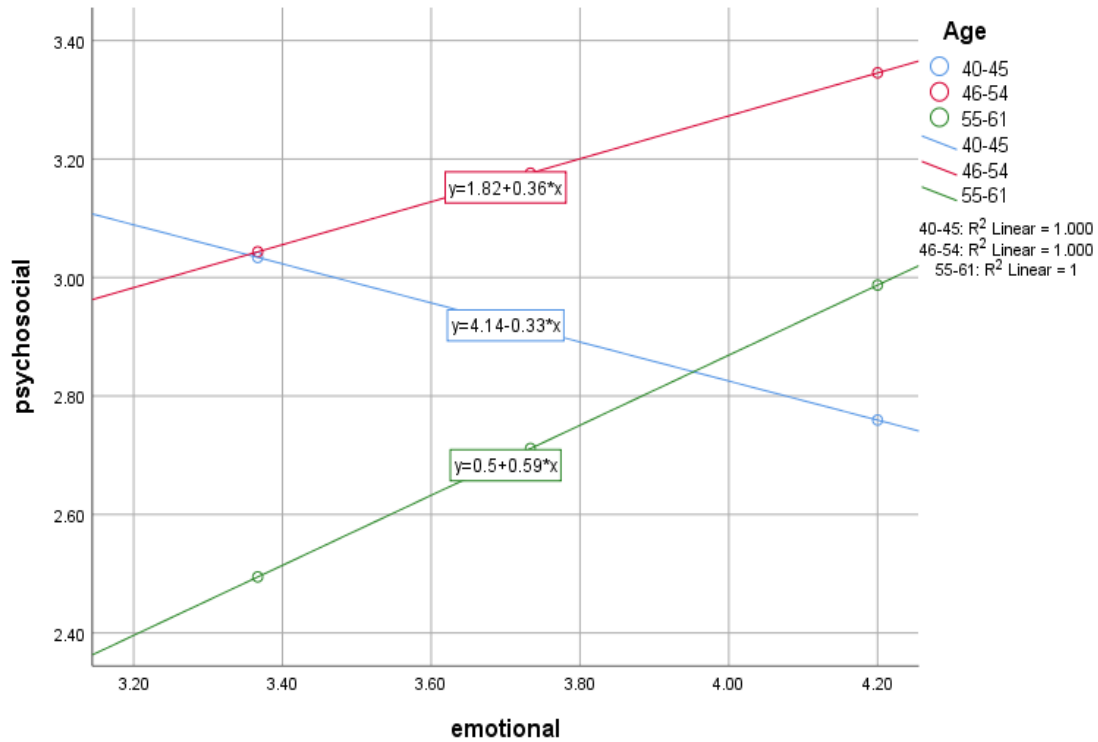
Dimensions	Variables	b-value		t-value	95% CI	
			BSE		BLLCI	BULCI
Vasomotor (Model 1)	Constant	2.11	2.61	0.80	-3.21	7.16
	X on Y	0.01	0.71	0.01	-1.38	1.44
	W1 on Y	-2.51	2.95	-0.84	-8.20	3.37

	W2 on Y	-1.60	2.83	-0.57	-7.10	4.26
	X*W1 on Y	0.67	0.79	0.84	-0.90	2.24
	X*W2 on Y	0.46	0.76	0.60	-1.07	1.96
Psychosocial (Model 2)	Constant	4.14	1.49	2.79	1.23	6.99
	X on Y	-0.33	0.38	-0.86	-1.04	0.44
	W1 on Y	-2.32	1.83	-1.28	-5.92	1.33
	W2 on Y	-3.64	1.76	-2.07	-6.95	-0.21
	X*W1 on Y	0.69	0.48	1.44	-0.27	1.63
	X*W2 on Y	0.92	0.45	2.03	0.02	1.78
Physical (Model 3)	Constant	2.25	0.91	2.46	0.57	4.16
	X on Y	0.14	0.25	0.58	-0.37	0.59
	W1 on Y	0.61	1.08	0.57	-1.59	2.64
	W2 on Y	1.25	1.06	1.18	-0.89	3.26
	X*W1 on Y	0.03	0.29	-0.09	-0.57	0.56
	X*W2 on Y	0.25	0.28	-0.88	-0.78	0.33
Sexual (Model 4)	Constant	9.52	7.68	1.24	-5.53	24.82
	X on Y	1.43	2.10	-0.68	-5.58	2.71
	W1 on Y	-6.06	8.19	-0.74	-22.35	9.61
	W2 on Y	1.89	7.85	0.24	-13.55	17.01
	X*W1 on Y	3.00	2.24	1.34s	-1.35	7.44
	X*W2 on Y	0.91	2.14	0.43	-3.19	5.07

W1 – 46-54 years; W2 – 55-61; Comparison group – 40-45years

Figure 1 shows a positive relationship between EI and the psychosocial dimension of QoL among participants in the 55 – 61 years age group. Therefore, as emotional intelligence of women from this age group increases, their level of the psychosocial dimension of quality of life increases as well. However, women aged 40 – 45 years shows a negative relationship between EI

and the psychosocial dimension of QoL. Therefore, as their EI increases, their psychosocial quality of life decreases.



Note: \* Interaction

**Figure 1.** Moderation graph for the relationship between emotional intelligence and psychosocial dimension of quality of life.

## DISCUSSION

Our study found a moderate severity of menopausal experience among women with regards to all four dimensions of quality of life (psychosocial, vasomotor, physical, and sexual domains). In our study sample, menopausal women, furthermore, reported overall a low emotional intelligence level. This study showed that menopausal women had an average moderate level in



all domains of QoL, in agreement with previous studies confirming a decrease in QoL of menopausal women [10, 33]. Also, Nisar and Sohoo [34] found in Ghana in menopausal women a decrease in QoL, despite their study was conducted in a rural setting, differently from the current study. In this research, emotional intelligence was found to be low among menopausal women. This finding agrees with previous studies conducted with the same type of sample [35, 36]. However, few studies found opposite results [37–39]. In our study, a significant relationship was found between EI and psychosocial aspect of QoL, as confirmed by [21], but in contrast with Al-Huwailah's research [40]. In our study, however, women had higher level of education than that reported in other studies [41, 42], and this could be the main reason of this difference.

Marital status was found not to moderate the relationship between emotional intelligence and QoL, as showed by past studies that revealed no relationship between emotional intelligence and marital status [43–45]. In literature, the relationship between EI and educational level was absent as in our study [26, 46]. Only Rahim and Malik [47] showed opposite results.

The moderation analysis showed no significant role of age on the relationship between emotional intelligence and sexual, vasomotor, and physical dimension of the QoL. On the contrary, age was a significant moderator on the psychosocial dimension of QoL, meaning that an increased EI is positively associated with an increased psychosocial dimension of the QoL.

Although the women who participated in this study were clustered around the same age, our study confirmed that women in early menopause (40-45 years) have lower levels of emotional intelligence and quality of life compared to women aged 46-54 and 55-60, confirming previous studies showing that the onset of menopause at early age tends to negatively affect QoL [21, 32], whereas the severity of menopausal symptoms decreases while ageing [32]. This study revealed

a interaction of age in the relationship between EI and QoL, which is supported by some studies which found an interaction between emotional intelligence and age [48–50]. Other studies, however, found a negative correlation between age and some aspect of EI [51]. However, many studies on emotional intelligence were conducted in different setting and most of them in western countries.

In conclusion, menopausal women in urban Ghana reported a moderate severity experience of menopausal symptoms with a moderate QoL and a low EI levels. In our sample, EI was found to positively influence the psychosocial aspect of their QoL. Socio-demographic characteristics such as marital status and educational level did not show any moderating role in this relationship. On the contrary, age had a partial moderating role in this relationship. Our community-based study confirms the need that policy makers put in place adequate strategies to improve the QoL of menopausal women in Ghana. Our research had some limitations. The study lacked classification and comparison between premenopausal, perimenopausal and postmenopausal women. Also, majority of participants had a lower educational level, which could have affected their understanding and responses on menopausal symptoms. Generalizability of the study was also limited due to the cross-sectional and community-based design of the research.

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