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Age of Onset of Menopause and Factors Associated with Common Symptoms among Women in Lusaka District, Zambia

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ABSTRACT

Background: Menstrual periods do not normally end suddenly; instead, there is frequently a period of transitional changes before and following the cessation of the period. Women typically endure physiological changes as a result of hormonal fluctuations, which impact their physical, emotional, and quality of life. Therefore, this study explored menopausal associated problems occurring in women residing in Lusaka, Zambia.

Methods: A cross-sectional study was conducted for a period of six months on 171 women aged 40 – 60 years old who were bedsitters for a hospital patient or visited the hospital. The univariate (unadjusted) and multivariable (adjusted) logistic regression using backwards stepwise analysis was performed to identify factors associated with the most common symptom women face after menopause reporting at 95 % confidence interval (95 % CI).

Results: The study revealed that the average age of menopause onset was 47.43 ± 4.46 years, with 75% of the women experiencing menopause between the ages of 45 and 55. Women complained of back pain (66.1%), headache (45%), hot flushes (30.6%), and mood changes (24.0%). Widowed (AOR 2.94; 95 % CI: 1.24–6.63), Obese (AOR 3.19; 95 % CI: 1.16 – 8.73), overweight (AOR 3.91; 95 % CI: 1.31 – 11.73) and early menopause (AOR 0.35, 95% CI: 0.13 – 0.92) were associated with back pain.

Conclusion: Women experience a variety of menopausal and postmenopausal problems like back pain, headache, hot flushes and mood changes which will require interventions to improve the health of women.

INTRODUCTION

Menopause is the cessation of the menstrual cycle for a period greater than one year[1] and often is a diagnosis made retrospectively.[2] Apart from the cessation of menstrual cycles, the woman can experience a variety of symptoms associated with menopause. These include hot flushes and sweats, joint and muscle pain, mood changes, vaginal dryness and low sexual desire.[3] Women tend to develop different symptoms associated with menopause which affect them in divergent ways.[4]

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The common problems associated with menopause affect interpersonal relations in society and also reduced productivity in the economy.[5] A study done in Maturities showed women who had attained the age of menopause had a lot inter relationship distress.[6] Another study had shown an increased prevalence of sleep difficulties due to menopause effects and also had an *economic* burden.[7] Furthermore, a study done in the US showed a similar outcome of sleep disturbance associated with menopause.[8] Menopause is still considered a myth in some African cultures.[9,10] Despite the Zambia Government spending millions of kwachas on different health services for reproductive women, menopausal women have challenges which still need attention.

A study done in India in 2016 showed that the average age of onset of menopause was found to be 46.2 years, much less than some western countries[11] with an average age of 50 years.[12] Another study done in America showed that the median age of menopause among white women from industrialized countries ranges between 50 and 52 years. The study further showed that the onset of perimenopause was 47.5 years.[13] Although the variation of onset occurs, associated factors may also vary, a study done in Iran, found specific relationship factors and their association with menopausal symptoms and showed marital satisfaction, as well as higher marital adjustment, satisfaction with children, and living with a first child, was highly associated with fewer menopausal symptoms.[14] A study was done in the United Kingdom (UK), showed evidence of both the positive and negative effects of menopause transition on working women, with more evidence of negative impact on economic participation such as lower productivity, reduced job satisfaction and problems with time management.[15]

In South Africa, the mean age of menopause was determined in a comparative study in rural versus urban areas found the ages to vary from 49.5 and 48.9 respectively.[16] Another study done in Nigeria found the mean and median age of menopause to be 48.4 and 48.0 years respectively.[17] Cultural beliefs have been seen to affect women who have attained menopause because it has been considered to be a taboo and/or sensitive discussion topic hence women remain silent for fear of embarrassment.[18] A recent study has shown a negative impact of symptoms on socio-*economic* participation identified in the evidence base which include *lower productivity*, *reduced* job satisfaction.[9,19]

According to the Zambia Demographic Health survey 2018, the prevalence of women who are menopausal ranges from 4% to 46 % for age ranges age 30-34 and age 48-49 respectively.[20] A study done by Chibuye, in Zambia showed that most women suffer from menopausal symptoms silently and do not know where to seek remedies for such health care needs.[21] Despite the Zambian Government spending billions of kwachas on different health services for women in Zambia, little has been done to target ageing women's needs on menopausal challenges. In addition, there is a paucity of data on the average age of menopause and associated problems in Zambia. This study explored this aspect.

Methodology

Study Design and Setting

The study was a cross-sectional study design. The study was carried out at the University Teaching Hospitals (UTH), located in Lusaka, Zambia, these study sites was chosen because they are specialised centres offering specialized medical-surgical, paediatric, ophthalmic, oncology, and women and new-born health services and have a lot of women escorts bringing their relatives. Also, included in the study was Chilenje level 1 hospital which serves primary medical-surgical health services to the surrounding communities within its catchment area in the Lusaka district. These sites presented a population base of women with characteristics of this current study. Elder women tend to escort relatives to the hospital.

Study Population

Women aged 35 and above who were in their postmenopausal period and met the eligibility criteria were included. The study included women who had secondary amenorrhoea greater than 12 months, had a valid consent and were able to recall their date of birth. Women who were not able to recall their last menstrual period, pregnant women or postnatal mothers that had delivered in the past 12 months were excluded.

Sample Size and Sampling Method

The sample size was calculated by utilizing Epi info version 7.2. using the following equation: $N = Z^2 \times P(1-P)/D^2$. The estimated sample size was 384. However, due to coronavirus restrictions on people visiting the hospital, this number was not reached. A total of 171 women took part in the study. Convenience sampling was used to recruit participants seeking medical care or nursing their relatives at the selected health facilities. Because creating a sampling frame for participants was not feasible, convenience was used for sampling. As a result, the study included selecting participants who were caregivers of patients at the selected health facilities. All accessible women who met the study criteria and completed the survey were included in the study.

Data Collection

An interviewer-administered questionnaire was used to collect the data, and also a review of hospital records. The questionnaire had three sections. The first section captured socio-demographic characteristics (ages, education, marital status, employment status, income status, residence, weight, height, smoking history and alcohol consumption history). The second section collected data on menopause, and the final section collected data on post-menopausal symptoms. After conducting interviews with the participants, the weight was measured using a weighing scale, and height was measured using a stadiometer. All post-

menopausal symptoms were assessed using participant self-report.

The principal investigator and/or research assistants identified eligible participants seeking care or visiting the designated public health facilities with relatives, who described the details of the study to prospective respondents, and valid consent was obtained from eligible participants. The participants who met the inclusion criteria and agreed to participate in the study had an interview through an interviewer-administered questionnaire. The language used was English, and some consents were translated into Nyanja and Bemba, both of which are widely spoken in Lusaka.

Data Analysis

The data were analysed using STATA software. Descriptive summary values such as frequency and percentage were used to describe the study's categorical variables. The continuous variables were summarized using the mean and the standard deviation after checking for normality assumptions. The univariate (unadjusted) and multivariable (adjusted) logistic regression using backwards Stepwise analysis was performed to determine factors associated with the common symptom women face after menopause. Measure of effect was reported using odds ratios (ORs) with a 95 % confidence interval (95 % CI). The model with backwards stepwise regression analysis was selected because it had the lowest value of Bayesian information criterion (BIC) and Akaike's information criterion (AIC). A p-value <0.05 was considered statistically significant. The significance level for variable selection was set at 0.200, therefore variables with a p value less than 0.200 were retained in the final model so that important variables that can influence the outcome were not missed. In model selection, the Bayesian information criterion (BIC) and Akaike's information criterion (AIC) were used, with the model with the lowest value being preferred.

Ethical Consideration

Ethical approval was obtained from UNZABREC with approval number 1501-2021. It was ensured that the study did interfere with the routine management of the participants if they happened to be patients. This also ensured appropriate optimal treatment and further follow-up of those participants who were admitted during the study. Before any participants were enrolled in the study, written consent was obtained. Throughout the study confidentiality and privacy was observed and data collected was anonymised by removing personal information that could be linked to the participants.

RESULTS

Demographic Characteristics of Participants

The study included 171 women in total. Nearly half of the participants 84 (49.1 %) were between the ages of 56 and 65, while 56 (32.7%) were between the ages of 46 and 55. The majority of the women in study 102 (59.6 %) completed primary school and 50 (29.2 %) completed secondary school. About 73 (42.7%) were married, while 72 (42.1%) were widowed. Concerning employment and income status of the women,159 (93%) were in informal employment. In terms of body mass index (BMI), 65 (42.2 %)) of the women were obese, 54 (35.1 %) were overweight, and 32 (20.8 %) were normal. The majority of the women in the study had never smoked 160 (93.6%) or consumed alcohol 123 (71.9%) (Table 1).

Table 1: Socio-demographic Characteristics of Women Aged 35 years and Above at University Teaching Hospital and Chilenje Level 1 hospital, Lusaka, Zambia.

Demographic characteristics	Frequency	Per cent (%)
Age		
35 - 45 years	6	3.5%
46 - 55 years	56	32.7%
56 - 65 years	84	49.1%
above 65 years	25	14.6%
Total	171	100%
Level of education		
Primary	102	59.6%
Secondary	50	29.2%
Tertiary	5	2.9%
None	14	8.2%
Total	171	100%
Marital status		
Married	73	42.7%
Divorced	20	11.7%
Single/Separate	6	3.6%
Widow	72	42.1%
Total	171	100%
Type of employment		
Formal	12	7.0%
Informal	159	93.0%
Total	171	100%
Body Mass Index		
Underweight (<18.5)	3	1.9%
Standard (18.5 – 24.9)	32	20.8%
Overweight (25 – 29.9)	54	35.1%
Obese 1 (= 30)	65	42.2%
Total	171	100%
History of smoking		
Yes	11	6.4%
No	160	93.6%
Total	171	100%
History of alcohol		
Yes	48	28.1%
No	123	71.9%
Total	171	100%

Age of Onset of Menopause

In a sample of 140 women, the average age of menopause onset was 47.43±4.46 years, with a 95 % confidence interval of 46.68 to 48.17 years (Figure 1). At the time of menopause, 3 women (2.14%) were under the age of 40 (premature menopause), 28 (20%) were between the ages of 40 and 44 (early menopause), 105 (75%) were between the ages of 45 and 55 (standard normal), and the rest (4 women; 2.86%) were over the age of 55 (late menopause) (Figure 2).
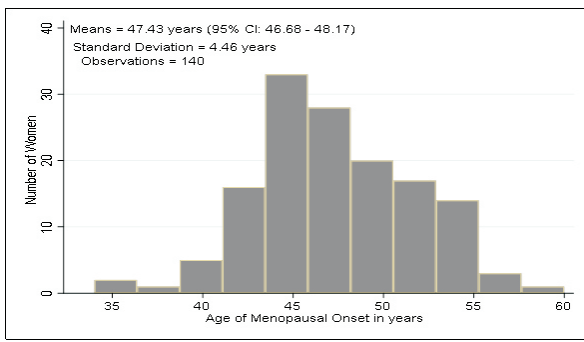

Figure 1: The Age of Menopause Onset Among Women Aged 40-60years at University Teaching Hospital and Chilenje Level 1 hospital, Lusaka, Zambia
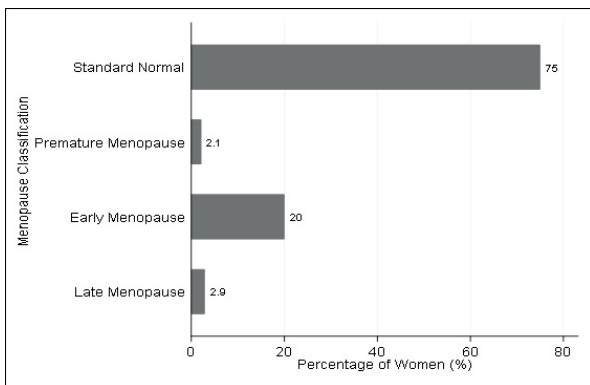

Figure 2: Age Group Disintegrated Proportion of Menopause Onset among Women Aged 35 years and above at University Teaching Hospital and Chilenje Level 1 hospital, Lusaka, Zambia

Postmenopausal Women's Problems

In this study, women complained of back pain (66.1%), headache (45%), hot flushes (30.6%), and mood changes (24.0%). Few women experienced urinary symptoms (9.4%), PV bleeding (9.4%), vaginal dryness (8.8%), genital prolapse (2.3%), and thromboembolism (0.6%) (Figure 3).
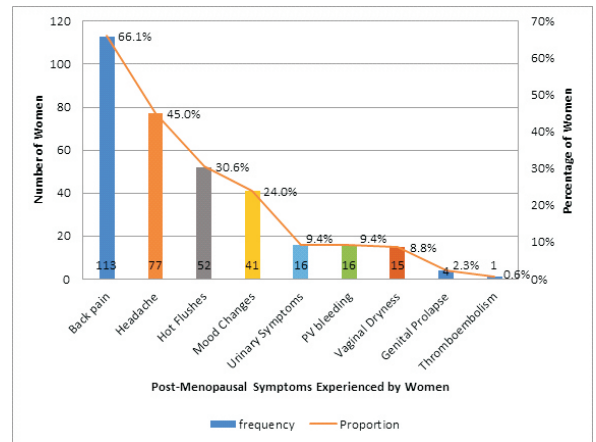

Figure 3: Common Menopausal Symptoms Experienced by Women Aged 35 years and above at University Teaching Hospital and Chilenje Level 1 hospital, Lusaka, Zambia.

Factors Associated with Common Problems Faced by Women after Menopause

To find factors associated with each of the common problems women face after menopause, Univariate and Multivariable Logistic Regression were performed. Back pain was found to be significantly associated with marital status and BMI in univariate analysis. In multivariable logistic regression, widowed women were 2.94 times more likely than married women to have back pain (AOR 2.94; 95 % CI: 1.24–6.63). Women who were overweight were 3.91 times more likely to experience back pain (AOR 3.91; 95 % CI: 1.31 – 11.73) than women who had normal body mass index, and women who were obese were 3.19 times more likely to experience back pain (AOR 3.19; 95 % CI: 1.16 – 8.73). In terms of menopausal onset, women who had early

menopause were 0.35 times less likely to have back pain than women who had menopause within the acceptable normal range (AOR 0.35; 95 % CI: 0.13 – 0.92) (Table 2)

Table 2: *Univariate and Multivariable analysis of factors associated with Back pain among women*

Variable	Univariate analysis		Multivariable analysis	
Back pain	OR (95%CI)	p value	OR (95%CI)	p value
Age	1.01 (0.96 - 1.05)	0.675		
Educational Level				
low education	Ref			
high education	0.96 (0.49 - 1.89)	0.905		
marital status				
Married	Ref			
divorced	1.63 (0.56 - 4.72)	0.369	2.44 (0.63 - 9.38)	0.195
single/separated	0.35 (0.06 - 2.02)	0.241		
Widow	2.09 (1.03 - 4.25)	0.041	2.94 (1.24 - 6.93)	**0.014**
Type of employment				
Formal	Ref			
Informal	1.40 (0.42 - 4.63)	0.58		
Place of residence				
low cost	Ref			
medium cost	1.26 (0.53 - 2.99)	0.597		
high cost	1.55 (0.62 - 3.89)	0.344		
Body Mass Index				
Standard (18.5–24.9)	Ref			
Underweight (<18.5)	1			
Overweight (25–29.9)	2.47 (1.00 - 6.07)	0.05	3.91 (1.31 - 11.73)	**0.015**
Obese 1 (≥ 30)	2.74 (1.14 - 6.59)	0.024	3.19 (1.16 - 8.73)	**0.024**
History of smoking				
Yes	Ref			
No	2.49 (0.73 - 8.54)	0.146	3.32 (0.72 - 15.21)	0.123
History of alcohol				
Yes	Ref			
No	0.96 (0.47 - 1.95)	0.92		
Menopause Onset				
Standard Normal	Ref			
Premature	0.20 (0.02 - 2.29)	0.196		
Early Menopause	0.46 (0.20 - 1.08)	0.076	0.35 (0.13 - 0.92)	**0.033**
Late Menopause	1.2 (1.64 - 12.0)	0.877		

DISCUSSION

The study's objective was to determine menopausal associated symptoms occurring in women residing in Lusaka, Zambia. The study revealed that the average age of menopause onset was 47.4 ± 4.46 years, which could range between 46.68 and 48.17 years. Regarding common post-menopause problems, back pain, headaches, hot flushes, and mood changes were the most common menopausal symptoms among women.

According to the study, the average age of menopause onset was 47.4 ± 4.46 years. Comparing this finding to findings from other studies, menopause at a similar average age has been reported in studies from India (46.6 years)[22], Yemen (47.8 years)[23], Mexico (47.9 years)[24], and China (47.9 years)[25]. Contrary to these findings, studies from Norway (52.7 years)[26], Taiwan (50.2 years)[27], and India (50.3 years)[28], revealed the average age of menopause onset to be higher than what was reported in this study, which is in contrast to the results of this study. The differences between this study's average menopause age and those from previous studies from other countries could be attributed to methodological inadequacies, which could lead to an under or overestimation of average age, genetics, race, lifestyle behaviour, and additionally, recent longitudinal studies in several countries have shown that the average age of menopause onset is gradually increasing.[26,27,29] The explanation or the reasons for the gradual increase in the average menopausal onset is, however, unknown.

Additionally, three-quarters of the women experienced menopause between the ages of 45 and 55. Although these findings may not be generalizable to other women due to the nature of the study, they may suggest that most women in Lusaka experience menopause between the ages of 45 and 55. This finding might also be supported by previous studies who also found that majority of their study participants experience menopause between the age of 45 and 55 years.[28,30,31] This study found that one-fifth of the study participants experienced early menopause. Earlier research found a similar proportion of early menopause[28] on the contrary, a lower proportion has been reported in other studies (6.7% - 8.7%).[30,32,33] The study also found that premature menopause was uncommon in women, with only two per cent of women experiencing premature menopause which is

consistent with previous research.[33,32] In this study, late menopause was equally uncommon, with just three per cent of women experiencing it, which matches other studies' findings,[30,31] a much higher proportion (12% - 21.6%) of late menopause has been reported in other studies.[28,32,33]

Menopause, whether it occurs early or late in life, is associated with negative health effects in women [34]. In this study, back pain, headaches, hot flushes, and mood changes were more common among women. Urinary symptoms, PV bleeding, vaginal dryness, genital prolapse, and thromboembolism, on the other hand, were reported by less than a tenth of women. As over two-thirds of women reported having back pain, the findings from this study may have implications for how we understand back pain in postmenopausal women. This provides insight into how common back pain is among postmenopausal women. These findings are consistent with those of previous studies in the literature.[35,36] Considering back pain can lower a woman's quality of life, this calls for special attention. In addition, a study reports that the symptoms of joint and muscular pain are more severe than those of other problems in terms of severity.[28] Some of the most important implications of these findings include how they can impact the development of interventions to promote women's health after menopause, such as general lifestyle advice and screening.

In this study, the headache was reported by about forty-five per cent of the women in the study, however the study did not consider the type of headache or its severity. Headache in postmenopausal women has been attributed to major fluctuations in hormone levels, notably estrogen levels; the perimenopausal transition can induce a temporary worsening of headaches.[37,38] Compared to other studies found that menopausal headache was less prevalent than a headache at other ages, but it might present a particular problem.[39]

Another common problem was hot flushes, which affected around one-third of the women. When compared to previous research, some indicated that more than half of women suffer hot flushes.[23,31,40,41] On the contrary, another study revealed a relatively smaller proportion than the one observed in this study.[30] Although most research state that mood changes are prevalent among postmenopausal women, with more than half of them experiencing them[24,28,36], this study reports a substantially smaller proportion (24%) of women experiencing them. Since participants self-reported their mood changes, the proportion may have varied if it had been measured on a scale, which could account for the differences in the proportion with other studies.

The study further looked at the factors associated with back pain experienced by women. The study found that widowed women were more likely than married women to have back pain, and similar findings were reported in another study.[42] It seems to be unclear exactly why back pain and being a widow are related. The study revealed that women who were overweight and obese were more likely than women with normal body mass index to experience back pain. The link between BMI and back pain has been well documented in the literature, with people with an elevated BMI experiencing significantly more low back pain than those with a normal or underweight BMI.[43,44,45,46] These findings show how important it is to promote healthier eating habits and more physical activity since they help avoid obesity and its negative effects on back pain. According to studies, the earlier menopause occurs, the greater the chance of long-term bone effects.[47,48] Although the literature suggests that early menopause is associated with back pain,[48,49,50] the study findings show women who had early menopause were at a lower risk to have back pain than women who had menopause within the acceptable normal range. It is unclear why such conflicting results were obtained. It is also unclear whether this difference in findings is merely the result of back pain being associated with other factors that were not analysed in the study, such as occupation and level of physical activity, both of which have an effect on back pain.

The study's limitations include the fact that the participants were women who were bedsitters for a hospital patient; as a result, the sample was not representative of the general community, and the results may not be generalizable. The study did not meet its desired sample size; hence, the small number of participants may have an effect on the reliability of a study's findings as it increases variability, which may lead to bias. Another limitation is that women's reproductive information was self-reported which might be vulnerable to recall bias, and recalling the exact moment of menopause may also be subject to recall bias. It is also possible that certain problems were not reported because participants did not believe them to be a problem or were too embarrassed to mention them.

CONCLUSION

This study found that most women menopause between 45 and 55 years of age. Post-menopausal problems are common, with back pain, headaches, hot flushes and mood changes being the most common. These problems affect women's quality of life, so it is important to understand their problems in order to develop strategies to delay their onset or provide coping mechanisms.

What is already known on this topic:

- A woman may experience a variety of symptoms associated with the menopause, in addition to the cessation of menstrual cycles.
- The mean age of menopause varies according to region and race.

What this study adds:

- Provides information about the average age of menopause and the age range at which most women experience menopause.
- Highlights the common symptoms experienced by post-menopausal women.

Disclosure statement

The authors declare that there are no conflicting interests.

Author Contribution

M.M was involved in the conceptualization, design of the study, data collection, analysis and writing of the manuscript. B.V was involved in the conceptualization, design of the study and reviewing of the manuscript. All authors approved the final manuscripts.

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