

Menopause at the Teaching Hospital Gabriel Toure in Bamako, Mali

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Abstract

Introduction: During menopause, most women experience symptoms and are at risk of developing numerous chronic diseases. **Methodology:** This was a retrospective cross-sectional study conducted from January 1, 2003, to December 31, 2016. Data were entered and analyzed with the software SPSS version 23.0 (IBM, Armonk, NY, USA). Chi-square tests were used to assess the association between women's menopausal status and their baseline characteristics. **Results:** High blood pressure (HBP) was the leading reason for consultation (15.3%), followed by leukorrhea (6.1%) and secondary amenorrhea (11.2%). Amenorrhea was present in 62.2% of cases, musculoskeletal complaints in 8.2%, palpitations in 6.1%, and urinary disorders in 5.1%. The main vasomotor symptoms were hot flashes (1.3%) and palpitations (7%). Cardiovascular and cancerous diseases were the most common among menopausal women in our study. Indeed, the most frequently observed morbidity was HBP (61.5%). Heart failure, diabetes, and non-traumatic bone lesions were present in 14.4%, 7.9%, and 4%, respectively. Cervical cancer was the leading cancer, with a frequency of 14.4%. Endometrial, breast, and ovarian cancers accounted for 6.5%, 2.5%, and 2.5% of cases, respectively. **Conclusion:** Menopause requires comprehensive care and support to help women through this often-difficult phase of their lives.

Keywords

Menopause, Age, Signs, Associated Conditions

1. Introduction

Menopause (MP) is a physiological phenomenon characterized by the decline in ovarian follicle function, occurring around age 50 [1] for most women. Globally, life expectancy at birth increased from 57.3 years between 1965 and 1970 to 73.9 years between 2015 and 2020. In Mali, life expectancy increased from 47.3 years between 1990 and 1995 to 59.7 years between 2015 and 2016 [2] [3]. The symptoms of MP and the risk of certain chronic diseases increase with age [4]. An early age at natural MP has been associated with an increased risk of cardiovascular disease, osteoporosis, stroke, atherosclerosis, and all-cause mortality [3], but also with a decrease in both breast and ovarian cancers [5]. Conversely, a delayed age is associated with increased risks of breast, endometrial, and ovarian cancers, but also with reductions in all-cause morbidity and mortality [3]. Socioeconomic status, lifestyle factors, reproductive factors such as age at menarche and childbirth, and genetic factors have been reported to affect the age at natural MP [3] [6] [7]. While some symptoms are not life-threatening, they negatively affect quality of life [8]. Age, sociodemographic characteristics, chronic diseases, psychological factors, lifestyle, and menopausal status are determinants of the prevalence and severity of menopausal symptoms [9]. Very few studies have been conducted on this topic in Mali [10], hence the need to study menopause at the Teaching Hospital Gabriel Toure.

2. Methodology

We conducted a cross-sectional and retrospective study from January 1, 2003, to December 31, 2016, based on the analysis of a database of gynecology, cardiology, and traumatology admissions at our hospital, a level 3 facility in the national healthcare system, receiving referrals from the district as well as from other parts of the country. All patients with a complete medical record that could be recorded into the gynecology database of the Department of Gynecology and Obstetrics at the Teaching Hospital Gabriel Toure were included in the study.

The data used were collected from patient medical records, medical/gynecological consultation registers, hospitalization registers, and surgical reports, as necessary.

This database contains approximately 150 variables related to the sociodemographic profile of patients, their reason for admission, clinical examination findings, diagnoses, treatment protocols, and treatment outcomes.

According to the world health organization, menopause is defined as a permanent cessation of menstruation resulting from a loss of ovarian follicular activity. It is said that a woman is menopausal after a consecutive period of amenorrhea of twelve months without obvious physiological or pathological cause. So his diagnosis is retrospective. Women with an iatrogenic menopause were those whose cessation of menstruation had followed chemotherapy, radiotherapy or hysterectomy that removed or destroyed the ovaries. They were added to the post-menopause group [11] [12].

Definition of the Reproductive Stages

All participants were divided into four groups according to their reproductive stage. Postmenopausal status was defined as at least 12 consecutive months of amenorrhea with no other medical causes. The postmenopausal period was categorized into three groups by the duration (years) of menopause from the last menstrual period (LMP) based on the Stages of Reproductive Aging Workshop (STRAW) +10 guidelines with the following modifications [13]: 1) early menopause (≤ 2 years from the LMP, stages +1a and +1b in the STRAW+10), characterized by rapid changes in estrogen and follicle-stimulating hormone (FSH) levels; 2) mid-menopause (2 - 8 years from the LMP, stage +1c in the STRAW+10), representing the period of stabilization of low estrogen and high FSH levels; and 3) late menopause (>8 years from the LMP, stage + 2 in the STRAW+10), representing the periods of limited change in reproductive endocrine function and when the aging process becomes of paramount concern. The non-menopausal participants, at the time of the hospital visit, were included in the premenopausal group.

The main variables studied were related to sociodemographic status, reason for admission, clinical examination findings, diagnoses, and treatment. These variables were entered and analyzed with the software SPSS version 23.0 (IBM, Armonk, NY, USA). Chi-square tests of independence were used to assess the association between women's menopausal status and their baseline characteristics.

We used the survival table method to estimate the 25th percentile (Q1), median (Q2), and 75th percentile (Q3) of age at natural menopause; these estimates were then stratified by the covariates of interest. We consulted the literature to select covariates that could be potential confounders for our research question.

For the unadjusted analysis, we calculated proportional hazards ratios using the Cox proportional hazards model to assess the association between each covariate and age at natural menopause.

For the adjusted analysis, we also constructed hazard ratios using the Cox proportional hazards model, employing year of birth and the other covariates as independent variables to identify factors associated with age at natural menopause. P-values < 0.05 were considered statistically significant.

This was a purely scientific work on the gynecological records constituting our database, and we took the necessary steps to anonymize all these records before data capture and analysis. Thus, in no case was it possible to identify a study participant. This database has been approved by the ethics committee of the Faculty of Medicine and Odonto-Stomatology of Bamako, Mali, for scientific publications.

3. Results

3.1. Frequency of Menopause

During the study period, we recorded 27,502 patients, of whom 6834 were menopausal, with a frequency of 24.8% (6834/27,502). Over the years, we have ob-

served an increase in the frequency of menopausal women in the department, with a minimum of 9.7% in 2005 and a maximum of 37% in 2012, according to **Figure 1**.

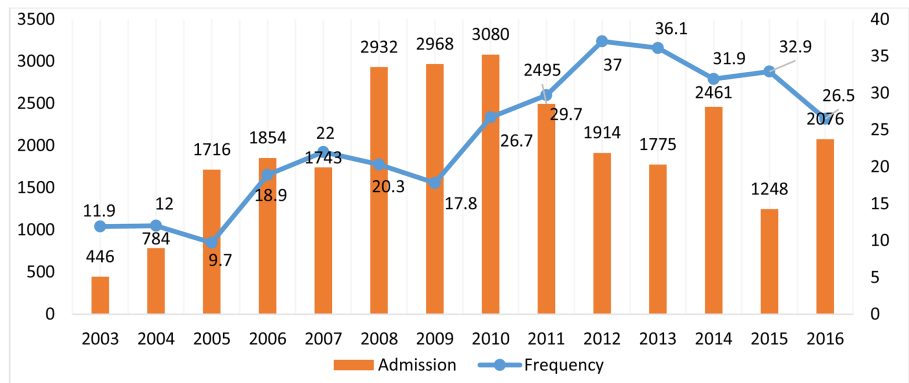


Figure 1. Evolution of the frequency of MP during the study period.

3.2. Age

The average age at MP was around 50 years, with a minimum age of 32 and a maximum of 68 years, and most women experienced menopause from the age of 55 onwards (**Figure 2**).

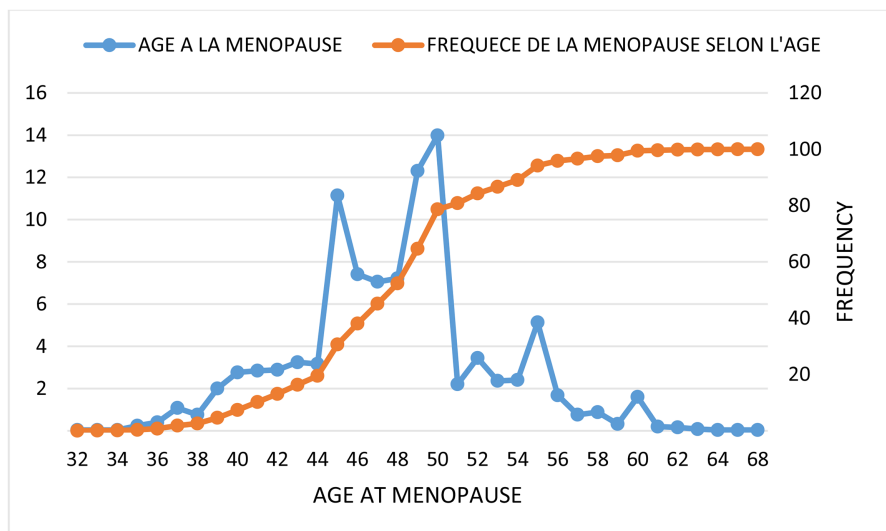


Figure 2. Frequency curve of age at MP (blue) and frequency of MP as a function of age (red).

3.3. Factors Influencing the Age of Menopause (MP)

According to the study of the secular trend in the age at MP, we observed that the 1960-1969 cohort had the highest ages at MP, as shown in **Figure 3**. Conversely, the youngest cohort, from 1949 to 1959, had the youngest ages at MP. The menopausal women aged 55 to 64 were the largest group with a frequency of 44.63%.

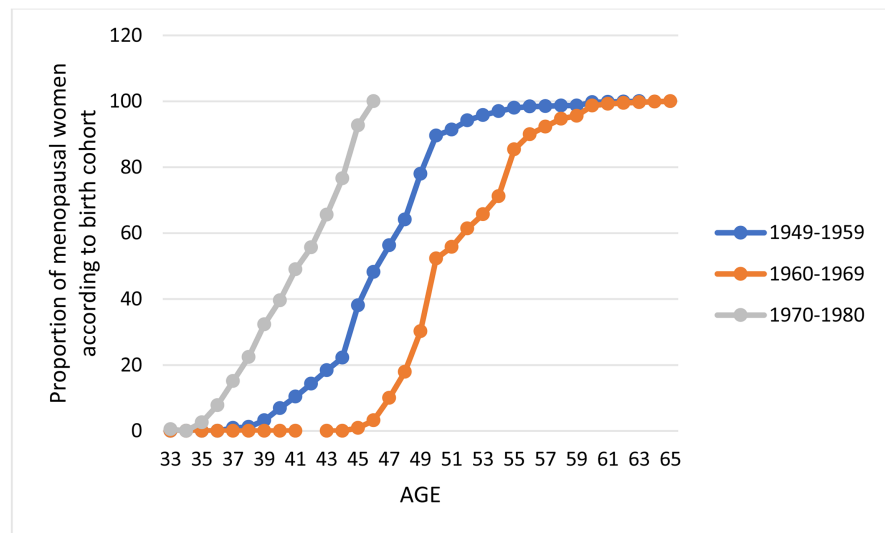


Figure 3. Trends in age at menopause according to birth cohorts.

3.4. Clinical Aspects

3.4.1. Reason for Consultation and Manifestations

High blood pressure was the most frequent reason for consultation, with a frequency of 15.3% (1836/12028). However, in gynecological terms, leukorrhoea and secondary amenorrhoea were the two main reasons, with 6.1% (731/12028) and 11.2% (1347/12028), respectively, while musculoskeletal disorders accounted for 4.6% (553/12028). Half of the women presented with at least one symptom of MP.

This symptomatology was polymorphic and dominated by amenorrhoea, 62.2% (4250/6834). Other symptoms included musculoskeletal complaints 8.2% (559/6834), palpitations 6.1% (419/6834), and urinary problems 5.1% (350/6834). The most commonly reported symptom was muscle and musculoskeletal pain, 8.2% (559/6834), following amenorrhoea. The main vasomotor symptoms were hot flashes 1.1% (77/6834) and palpitations 6.1% (419/6834), while psychological symptoms were dominated by physical and sexual exhaustion 0.6% (44/6834). According to body mass index, the underweight (BMI < 18.5) were 15.8% (238/1504), normal weight (BMI 18.5 - 24.99) 45.3% (681/1504), overweight (BMI 24.99 - 29.99) 19.1% (288/1504), and obese (BMI > 30) 19.7% (297/1504).

Regardless of the menopausal phase, a significantly high proportion of women experienced at least one menopausal symptom. This frequency was 43.4% (2966/6834) for perimenopause, 46% (3144/6834) for actual menopause, and 47.3% (3233/6834) for post menopause. Among the symptoms, cardiovascular, musculoskeletal, and urogenital disorders remained high at all stages of menopause.

Cardiovascular disorders accounted for 12% (356/2966), musculoskeletal disorders for 17% (505/2966), and urogenital disorders for 14% (416/2966) of cases in the premenopausal phase. In the menopausal phase, cardiovascular disorders represented 7% (220/3144), while musculoskeletal and urogenital disorders accounted for 9% (283/3144) of cases each. In the postmenopausal phase, cardiovascular disorders were present in 10% (323/3233) of cases, musculoskeletal disorders

in 14% (453/3233), and urogenital disorders in 13% (421/3233) of cases. We also observed that as menopause progressed, hot flashes decreased, while musculoskeletal complaints, physical exhaustion, urogenital disorders, and sleep disturbances increased. Concerning weight gain, it was similar in women at all stages of menopause.

3.4.2. Pathologies

They became prominent at menopause. The longer menopause lasted, the higher the incidence of HBP, cardiac failure, and diabetes, with 61.5% (4200/6834), 14.4% (984/6834), and 7.9% (538/6834), respectively, in women experiencing late menopause. Among these menopausal women, cervical cancer represented the leading cancer, with a frequency of 14.4% (987/6834). However, endometrial, breast, and ovarian cancers accounted for 6.5% (443/6834), 2.5% (173/6834), and 2.5% (174/6834) of cases, respectively. Bone fractures 2.1% (143/6834) and non-traumatic bone lesions 4% (270/6834). Cancer pathologies occur at the forefront of menopause, and their risk of occurring was to 26.9 endometrial cancer, OR 5.4 breast cancer, OR 4.1 ovarian cancer, and OR 3.7 cervical cancer (Table 1).

Table 1. Comparison of associated pathologies in menopausal and non-menopausal women.

Diseases	Menopause			Non-Menopause		
	%	OR	IC	%	OR	IC
Fibroma	2.1%	0.377	0.324 - 0.439	7.0%	3.419	2.933 - 3.986
High Blood Pressure	44.8%	4.411	4.163 - 4.672	29.2%	0.385	0.363 - 0.409
Cardiac Failure	10.5%	2.660	2.434 - 2.908	6.7%	0.568	0.519 - 0.621
Diabetes	5.7%	3.423	3.022 - 3.878	2.6%	0.416	0.367 - 0.473
Urinary Infection	0.7%	0.243	0.189 - 0.313	2.6%	2.678	2.060 - 3.482
Bone Fracture	1.5%	2.123	1.712 - 2.632	1.1%	0.706	0.569 - 0.875
Non-Traumatic Bone Lesions	2.9%	1.603	1.380 - 1.862	2.8%	0.934	0.804 - 1.086
Cervical Cancer	10.5%	3.769	3.426 - 4.146	4.5%	0.366	0.332 - 0.403
Breast Cancer	1.8%	5.451	4.248 - 6.995	0.4%	0.190	0.143 - 0.252
Endometrial Cancer	4.7%	26.961	20.25 - 35.897	0.2%	0.038	0.027 - 0.053
Ovarian Cancer	1.9%	4.128	3.283 - 5.189	0.4%	0.225	0.173 - 0.293

4. Discussion

We conducted a cross-sectional study on the epidemiology of menopause in patients admitted to the Teaching Hospital Gabriel Toure from 2003 to 2016, particularly in the Gynecology-Obstetrics, Cardiology, and Traumatology departments. We found that our menopause frequency was 24.8%. The mean age at menopause was 47.92 years \pm 4.87 years. There was a long-term downward trend in the age of

menopause in our setting as well as in the literature. Vasomotor symptoms of menopause were not a common reason for consultation. Women were admitted for other reasons, and menopause was associated with an increase in cardiovascular, musculoskeletal, and cancerous conditions.

We found out a menopause frequency of 24.8% among all admissions during the aforementioned period, with 18.2% of women being premenopausal and 4.4% perimenopausal. Other menopause frequencies, lower than ours, were reported by studies conducted in Mali. In 2009, Lamine S Diarra pointed out 7.54% [10], and in 2010, D Camara reported 14.8% [14]. In Benin, the menopause frequency was 17.4% according to Denakpo *et al.* in 2004 [15]. Furthermore, in Korea, Yim Gyeoun MPH found out a frequency of menopausal women 20.7%, 42.6% of women being premenopausal, and 36.7% perimenopausal [16]. This variability in frequency can be explained by the different methodological approaches used by the authors.

In the international literature, the age at menopause varies between 45 and 55 years [17]. In Europe, the mean age at menopause ranges from 50.1 to 52.8 years, in North America from 50.5 to 51.4 years, in Latin America from 43.8 to 53 years, and in Asia from 42.1 to 49.5 years [18]. An international study of 11 countries found that the median age at natural menopause was 50 years, with a range of 49 to 52 years [16]. It is generally accepted that the average age at menopause is around 51 years in industrialized countries [19], but the data differ for the developed world. The mean age at menopause in our study was 47.92 years \pm 4.87 years. This is similar to that reported in Iran, 47.8 years [20], in Turkey, 47.8 years [18], and is parallel to the mean age at menopause found in Cotonou, with 48.41 years \pm 1.15 years [21], in Egypt, 46.7 years [20], and in the United Arab Emirates, 48 years [22]. The average age of natural menopause is younger than that of a Chilean study, with 55.3 years \pm 5.7 years, while in premenopausal women it was 49.1 years \pm 3.0 years [16], younger than that of Malaysian women, with 50.7 years.

There is a long-term downward trend in the age of menopause in our context, as in the literature. The hypothesis of an increase in the age of menopause over the last century has been strongly argued, but there does not appear to be solid evidence of a consistent long-term trend in this direction in European populations [23]. However, indications of long-term variation have been noted [24].

Among the 6834 menopausal women in our study, nearly half (3146) presented with at least one menopausal symptom. The prevalence of these menopausal symptoms varied considerably, from 74% of menopausal women in Europe to 36% - 50% in North America, 45% - 69% in Latin America, and 22% - 63% in Asia [24].

Our study revealed that musculoskeletal complaints were the most common menopausal symptom (8.2%) after amenorrhea (62.2%). This aligns with findings in the literature, which reported muscular and musculoskeletal discomfort as the most common symptom [16] [25]-[27].

Similar results were found with a slightly higher frequency in Benin, with 15.68% in 2014 [18], and in Sri Lanka in 2009, where this discomfort was present in 62.5% and 76.7% of premenopausal and postmenopausal women, respectively [14]. Sim-

ilarly, in Nigeria in 2009, 51.7% of premenopausal women and 65.1% of menopausal women [28], and in Chile, 80.1% of premenopausal women and 85.3% of menopausal women experienced this discomfort [16].

As for vasomotor, psychological, and sexual disorders, they were not frequently observed as a common reason for consultation in our setting. Hot flashes represented only 1.1% of our study population, compared to a global frequency ranging from 70% to 80% [29]-[31].

In Egypt, the frequency was 90.7% [27], 32% in Pakistan [14], 64.3% in Bangladesh [29], 45% in North America and the United Arab Emirates [18], 73.90% [29] in the Netherlands and 50% in Turkey [30], 58.7% in Cotonou [15], and in Yemen, 100% of menopausal women experienced hot flashes [31].

Regarding urogenital disorders, urinary disorders were more common (71.14%), followed by vaginal dryness (19.3%). A similar result was observed in Bangladesh and India, with 43.93% and 48.28%, respectively [28]. The frequency and, especially, the date of onset of these symptoms vary considerably in the literature [15].

The observed frequency of sexual dysfunction was 0.5%, compared to 83.5% in Yemen [31], 69.6% in Botswana [27], 65.6% in Ibadan, Nigeria [26], and 89.1% in Egypt [27].

Menopause, like postmenopause, is a hazard and a risky phase in a woman's life [17]. It is associated with an increase in cardiovascular, musculoskeletal, and cancerous pathologies [17] [26]. Regarding non-traumatic bone damage, a significant frequency of cases was found (2.9%), which could be explained by bone fragility during menopause [28]. In Botswana, the frequency of bone weakening was 78% [32]. Regarding cancer pathology, gynecological and breast cancers represent twenty percent of the pathologies of menopausal women in this study (breast cancer, ovarian cancer, and cervical cancer). Cervical cancer is the most common, contrary to the literature [33] [34], where breast cancer and endometrial cancer are the two main cancers in menopausal women.

The WHO considers that social, psychological, and medical support during the transition to and after menopause should be an integral part of health care [2].

5. Conclusion

During menopause, it is essential to be able to diagnose and manage clinical situations in order to alleviate functional symptoms and prevent organic complications resulting from the hormonal changes inherent to this period. Menopause, therefore, represents a public health issue in the area of prevention. Consequently, it should be approached with a focus on prevention and screening.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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