



Nutritional Status of Menopausal Women in the Rural Area of Marrakech (Morocco)

Rania Lotfi¹, Mohamed Loukid², Mohamed Kamal Hilali³

^{1,2,3} Laboratory of Human Ecology, Biology Department, Faculty of Science Semlalia
University of Cadi Ayyad, Marrakech (Morocco)
(¹rani.flr@gmail.com, ²loukid@ucam.ac.ma, ³hilali@ucam.ac.ma)

Abstract- Menopause is the permanent cessation of menstruation resulting from the loss of follicular activity of the ovaries. Very few studies have been conducted on nutritional status of menopausal women. Hence it enforces to debate the need for special attention to this group by health care centers.

This work presents the results of a retrospective cross-sectional survey, conducted on a sample of 500 women living in rural area of the province of Marrakech.

The aim of this work is to assess the nutritional status of the menopausal women related with different factors.

The results show that 43.8% of women were overweight and 32.2% were obese, the rate of underweight women is 0, 8%. In addition, 22.8% of women were in a normal state, depending on hormonal status, the majority of postmenopausal women and postmenopausal were obese.

Sociodemographic and gynecological factors play an important role in the onset and progression of overweight problems.

Efforts are necessary for creating nutritional and health awareness among rural women to ensure a better quality of life at menopause. This power must be correlated to find a psychic balance and practice of regular physical activity.

Keywords- Menopause; nutritional status; rural area; Marrakech; Morocco

hormones which leads to various emotional and physiological symptoms [7].

The result of low levels of hormones is often manifested by deleterious physical, psychological and sexual changes in menopausal phase. The menopausal phase is now recognized as a time of decreased hormonal production with associated problems that reduce the quality and length of life for a large number of women [8], and may increase the risk of osteoporosis and possibly coronary heart disease.

Some women have a change and a rejection of body image with a risk of switching to real eating disorders. These disorders are accompanied by an increased risk of cardiovascular disease, bone and cognitive disorders and overweight [9]

All these, psychological and physiological changes have an impact on food intake and food choices of menopausal women. It is an established fact that a well balanced diet is important for good health and to combat some of the complications of menopause to certain extent [10]. Therefore, there is a need to study the nutritional status of menopausal women.

In Morocco, there are nearly 3 million women affected by menopause, Very few studies have been conducted on nutritional status of menopausal women. Hence it enforces to debate the need for special attention to this group.

The aim of this work is to assess the nutritional status of the menopausal women among rural area of Marrakech state (Morocco).

I. INTRODUCTION

Menopause is the permanent cessation of menstruation resulting from the loss of follicular activity of the ovaries [1].which is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other obvious pathological or physiological cause [2].

Although menopause is a universal phenomenon, there is a considerable variation among women regarding the age of attaining menopause and the manifestation of menopausal signs and symptoms. Worldwide, the estimates for the median age at menopause range from 45 to 55 years [3]–[6]. It is usually different for every woman, rocky time with fluctuating

II. MATERIALS AND METHODS

Menopause is the physiologic cessations of menses associated with failing ovarian function, may be diagnosed in retrospect when a year has passed with no menses.

The present study is based on a cross sectional survey carried in 2010-2011 in the rural area of Marrakech (Tahenaout, Ait ourir and Amez Miz). A total of 500 women were enrolled in the study. The age range of the women was 40-72 years and the median age was 52.19 ± 7.42 years. The recruitment of women has done a randomly among the female clients of health center.

The survey consists of two operations: the first is to questioning woman and the second is taking some of the anthropometric and physiological measures.

A detailed questionnaire was structured to collect necessary data on sociodemographic variables; menstrual and reproductive history of the participants. To study the menopausal transition, The subjects were divided into three groups recommended in the Stages of Reproductive Aging Workshop [11]: The premenopausal: the period before menopause and can range from one to ten years.,the menopause: 5 years following the last menses (early menopause) and the postmenopause: lasting from 5 years of menopause (late menopause).

Anthropometric measurements were based on recommendations from the International Biological Programme [12].

The assessment of the nutritional statuses carried among the women by measuring the corporal mass index (BMI). Body mass index (BMI) was calculated as weight (kg) divided by height square (m²).The categories of BMI: underweight, normal, overweight and obesity adopted are those proposed by the World Health Organization [13].

The nature of research was explained to all of the participants, and verbal consent was taken from each of them before the data were collected.

Data were analyzed using the Statistical Package for the Social Sciences v10 for Windows. The level of statistical significance set at 0.05.

III. SOCIODEMOGRAPHIC PROFILE AND MENOPAUSAL STATUS OF STUDIED POPULATION

The demographic profile of menopausal women is presented in the Table I.

The mean age of the participants was 52.2 ± 7.42 .The data collect of 500 women consisting of 161 premenopause, 194 menopause and 144 post-menopausal women.

About 26% of women belonged to the age group of 45-50 years followed by 21 per cent in 50-55 years. The majority of the rural women in all the categories were illiterate and homemakers. With regard to marital status, all the women were married and a few women were found single.

The menopause was natural (rather than surgically induced) in 65, 6% of cases.

About 58% of women reported use oral contraceptives.

Variables	Categories	n	%
Age group (years)	1 (40-45) 2 (45-50) 3 (50-55) 4 (55-60) 5 (>60)	59 79 65 63 34	19,7 26,3 21,7 21,0 11,3
Educational status	Illiterate literate	496 4	99,2 0,8
Employment status	Housewife Others	473 22	94,6 5,4
Marital status	Married Divorced Widowed Remarried Single	374 15 84 19 5	74,8 3,0 17,4 3,8 1,0
Menopausal status	Premenopause Menopause Postmenopause	161 195 144	32,2 39,0 28,8
Menopause	Natural Surgical	328 12	65,6 2,4
Use of oral contraceptives	Yes No	216 284	43,2 56,8

IV. RESULT

In this study, the mean body mass index among women surveyed (Fig.1) is $28,06 \pm 4,35 \text{ kg/m}^2$. This mean value of BMI was found to be higher compared to the BMI of urban women of Marrakech area [14].

The body mass index varies in the same manner as the weight. The first peak is observed in women in the age group 45-50 years, up to the age group 50-55 years, followed by a fall of about 1 kg/m² in women of age between 55 and 60, after 60 years BMI showed more lower values as a normal result of aging.

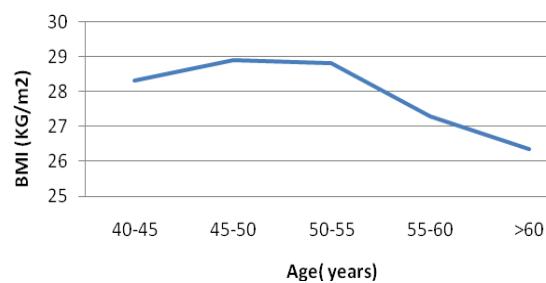


Figure 1. The mean of height, weight and BMI of surveyed women

TABLE I. RESPONDENTS' SOCIOECONOMIC AND DEMOGRAPHIC CHARACTERISTIC
Results are presents as number and percentage

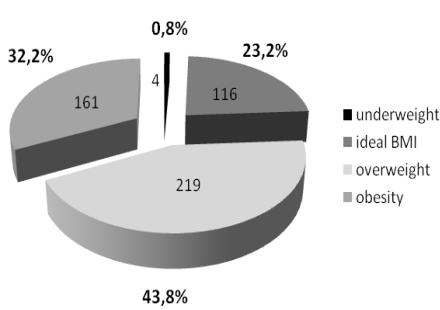


Figure 2. Distributions of women according to Body Mass Index (kg/m²)

BMI is considered to positively correlate with certain health and longevity indicators [15].

Classification of menopausal women based on BMI is depicted in Fig. 2

It is clearly noticed from the Figure 2 that higher proportion of women were overweight (43.8%), followed by 32.2% of women in obese category. 22.8% of women belonged to normal category, while only 0.8% of women were under weight. For the impact of events on the hormonal changes in body weight, menopause is questioned in second place after pregnancy [16].

In Morocco, 13.3% of the population is obese. according to [17] the prevalence of obesity among Moroccan women is 49%.

The distribution of body mass index is statistically different depending on hormonal status (menopausal status) (see Fig.3).

Most of the pre-menopausal women belonged to overweight category and higher percentage of post-menopausal and menopausal women belonged to obese category.

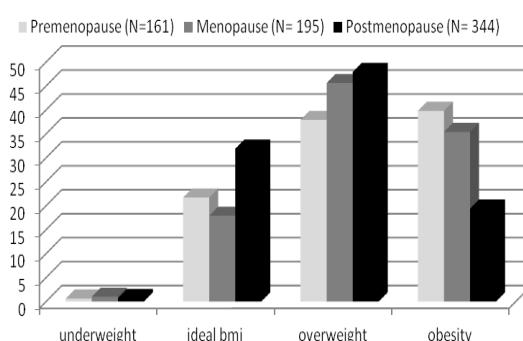


Figure 3. Classification of menopausal women based on BMI (kg/m²) (Test $\chi^2 = 20,15$, $p < 0,05$)

During menopause, weight gain is very common, after menopause many women begin slow but steady weight gain. There is a decline in lean body mass and increase in fat mass in menopausal women [18]. According to our result in this study similar results were obtained by [19] and [20].

According to Table II, Results from the present study indicate that there was a significant difference between age groups and marital status in the prevalence of overweight and obesity among women surveyed These results are consistent with those reported by [21] noted that weight at mid-life was correlated positively with calendar age.

By cons, no significant difference was observed between BMI and education level and the function of women who are mostly illiterate and housewives and presents all a higher percent of overweight. In many other studies, [22] higher BMI was associated with lower social class measured in the present study by attainment educational.

An association might be expected between BMI and the various physical activities for women. The physical activity of the women in the middle years decreases along with metabolic rate.

In addition to socioeconomic factors and physical activity of women, the nutritional status of women is also influenced by gynecological factors. The number of children and the frequent use of oral contraceptives, significantly increase the prevalence of overweight and obesity.

We should not underestimate the role of role often psychological factors in weight gain, real or imagined, of women in the menopausal period that lead women to change their eating habits.

V. CONCLUSION

A significantly higher prevalence of obesity was noted among menopausal rural women. Sociodemographic and gynecological factors play an important role in the onset and progression of overweight problems.

Efforts are necessary for creating nutritional and health awareness among rural women to ensure a better quality of life at menopause. This power must be correlated to find a psychic balance and practice of regular physical activity.

ACKNOWLEDGMENT

The authors would like to thank the women of rural area who participated in this study for their close cooperation with us.

TABLE II. ASSOCIATION BETWEEN BODY MASS INDEX OF WOMEN AND SOME SOCIOECONOMIC FACTORS

Factors	Categories	Ideal BMI n (%)	Overweight n (%)	Obese n (%)	P-value*
Age group (years)	1 (40-45)	21 (21,2)	42 (42,4)	35 (35,4)	0,002 s
	2 (45-50)	21 (19,8)	39 (36,8)	46 (43,4)	
	3 (50-55)	18 (14,8)	62 (50,8)	41 (33,6)	
	4 (55-60)	23 (24,5)	47 (50,0)	23 (24,5)	
	5 (>60)	33 (41,8)	29 (36,7)	16 (20,3)	
Educational status	Illiterate literate	116 (23,4) -	215 (43,3) 4 (100)	161 (32,5) -	0,16 ns
Employment status	Housewife Others	82(21,9) 34(27,1)	166(44,4) 51(42,0)	120(33,2) 36(29,0)	0,063ns
Marital status	Marries Widowed Others (remarries,divorced single)	82(21,9) 24(28,6) 10(25,6)	166(44,4) 34(40,5) 17(43,6)	124(33,2) 25(29,8) 11(28,2)	0,004 s
Physical activity Shopping Household chores	Yes	26 (21,3)	42 (34,4)	53 (43,4)	0,02 s
	No	90 (23,8)	177 (46,8)	108 (28,6)	
	Yes	66 (22,4)	118 (40)	108 (36,6)	
	No	49 (24,3)	100 (49,5)	52 (25,7)	
Number of children	0 1 à 2 3 à 4 ≥ 4	2(9,1) 19(39,6) 10(17,5) 85(22,8)	15(68,2) 15(31,3) 25(43,9) 164(44,0)	4(18,2) 14(29,2) 22(38,6) 121(32,4)	0,019 s
Use of oral contraceptives	Yes No	71(29,1) 44(18,4)	104(42,6) 103(43,1)	68(27,9) 90(37,7)	0,02 s

Results are presented as number and percentage

*p-values are based on chi-square test

ns : non-significant ; s : significant

REFERENCES

- [1] World Health Organization. *Research on the menopause in the 1990s* [WHO Technical Report Series No. 866]. Geneva: Author, 1996
- [2] The North American Menopause Society. Internet communication: <http://www.menopause.org>, 2001.
- [3] A. Biri, C. Bakar, M. Maral, O. Karabacak, & M. A. Bumin, Women with and without menopause over age of 40 in Turkey: Consequences and treatment options. *Maturitas*, 50, 167-176. B. Smith, "An approach to graphs of linear forms (Unpublished work style), unpublished", 2005.
- [4] P. Kaufert, & J. Syrotuik, Symptom reporting at the menopause. *Social Science and Medicine*, vol. 15, pp. 173-184, 1981.
- [5] D. Kaw , B. Khunnu , & K. Vasishtha, Factors influencing, the age of natural menopause. *Journal of Obstetrics and Gynecology of India*, vol. 44, pp. 273-277, 1994.
- [6] S. Y Ku, J. W. Kang , H. Kim, P. S Ku, S. H. Lee, C. S. Suh, et al., Regional differences in age at menopause between Korean-Korean and Korean-Chinese. *Menopause*, vol. 11, pp. 569-574, 2004.
- [7] M.H. Macdonald, A.S. New, H.N.M. Golden, K.M. Cambell, and M.D. Reid, Nutritional associations with bone loss during the menopausal transition :evidence of a beneficial effect of calcium, alcohol and fruit and vegetable nutrientsand of a detrimental effect of fatty acids. *American Journal of Clinical Nutrition*, vol. 79, pp. 155-165, 2004.
- [8] E.D. Sellmeyer, L.K. Stone, A. Sebastian, and R.S. Cummings, A high ratio of dietary animal to vegetable protein increases the rate of bone loss and the risk of fracture in post-menopausal women. *American Journal of Clinical Nutrition*, vol. 73 ,pp. 118-122, 2001.
- [9] JM. Lecerf, Alimentation et Ménopause 2008 ; 43 : 136-48. *Reprod Hum Horm*, vol. 21, pp. 462-7, 2008.
- [10] J. Karnataka , Nutritional Status of Menopausal Women, *Agric. Sci.*, vol 21, pp.152-154, 2008.
- [11] MR. Soules, S. Sherman, E. Parrott, and al., Executive summary: stages of reproductive aging workshop (STRAW). *J Women's Health Gender-based Med*, vol 10 , 2001.
- [12] J.S. Weiner and S.A. Lourie, , *Human Biology: A guide to field methods*, , Blackwell Scientific Publications, Oxford, IBPHandbook n° 9,1969.
- [13] World Health Organization, Physical status:The use and interpretation of anthropometry.Report of a WHO expert committee. Who.Tech.Rep.Ser., pp.854, 1995.
- [14] M. Loukid, Vieillissement reproducteur d'une population féminine de la ville de Marrakech (Maroc): approche anthropobiologique. Thèse de Docteur d'état es-sciences, Université Cadi Ayyad, Faculté des Sciences de Marrakech ,2007.
- [15] H.H. Keller, and T.Ostbye, Body Mass Index (BMI),BMI change and mortality in community dwelling seniors without dementia, *Journal of Nutrition Health and Aging*, pp. 316-320, 2005.
- [16] J. BerdahComment rester en forme(s) après 50 ans ? Staying fit after fifty. *Gynécologie Obstétrique & Fertilité* , vol. 34 ,pp. 920-926, 2006.
- [17] El Ayachi, M. Mziwira, M. Lairon, D. Belahsen, Prevalence of parameter indicators of obesity and its relationship with metabolic syndrome in urban Moroccan women. *American Journal of Human Biology*, vol. 20, pp. 484-486, 2008.

- [18] C.A. Perry, B.E. Apple Gate, L.M. Allison, C.P. Miller, and F.J. Signorile, Relation between anthropometric measures of fat distribution and cardio vascular risk factors in over weight pre and post menopausal women. *American Journal of Clinical Nutrition*, vol.66, pp.829-836, 1997.
- [19] A .Tchernof and ET. Poehlman, Effects of the menopause transition on body fatness and body fat distribution. *Obes Res*, pp. 246-254, 1998.
- [20] S. Tapadar, K. A. Mandal, G.M. Debnath, and K.S. Mandal, Overweight, hypertension and ECG changes in menopausal women in West Bengal. *Journal of Indian Medicalal Association*, vol.102, pp.122-123, 2004.
- [21] Q.Wang, C. Hassager, P. Ravn, S. Wang, C. Christiansen, Total and regional body-composition changes in early postmenopausal women: age-related or menopause-related? *American Journal of Clinical Nutrition*, vol. 60, pp.843-848, 1994.
- [22] J.Sobal, AJ. Stunkard, Socioeconomic status and obesity: a review of the literature. *Psychol. Bull.*, vol. 105, pp. 260-275, 1989.