



ASSESSMENT OF THE MENOPAUSAL SYMPTOMS AND THEIR EFFECT ON THE QUALITY OF LIFE IN DIABETIC POSTMENOPAUSAL OSTEOPOROSIS WOMEN

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ABSTRACT

Background: The transition through menopause is a life event that affects the quality of life. More than 80% of women show physical and psychological symptoms that accompany menopause, with different levels of severity and life disruption. The study aims to assess the menopausal symptoms and their effect on the quality of life. **Subjects and methods:** A Prospective, Interventional and Comparative study was conducted among both inpatient and outpatient diabetic postmenopausal subjects, from the departments of orthopedic, General Medicine, Obstetrics and Gynecology at Malla Reddy Hospital, Jeedimetla, Hyderabad, Telangana. The study group was recruited based upon the inclusion criteria: The Diabetic Postmenopausal women age group more than 45 Years of all weight groups, using either insulin or oral hypoglycemic agents. Data was collected in interview sheet designed by investigators and Menopause Specific Quality of Life Questionnaire (MENQOL). **Results:** A total of (n=520) postmenopausal women with Diabetes Mellitus were recruited and finding of this studies showed the following as hot flushes (28.6%), experiencing poor memory (62.5%), being dissatisfied with their personal life (71.3%), Low backache (56.6%), and change in sexual desire (18.4%). The highest mean score was identified for sexual domain followed by psychosocial features. **Conclusion:** The mean scores of physical and vasomotor domain were more in diabetic postmenopausal women which suggest that main menopausal symptoms were closely associated with decreased quality of life in women. The current study also recommended that Health care providers need to play an instrumental role in menopausal women's health needs. Further research is also necessary addressing that woman's health needs

INTRODUCTION

According to the World Health Organisation (WHO), it was estimated that in 2030, 1.2 million women will be premenopausal or postmenopausal which will increase by 4.7 million per year¹. One of the goals of health service for all the people in 21st

Century is to improve quality of life. By WHO definition, quality-of- life is the individual's Perception of their status in life according to the culture and value systems the person lives in, considering his goals, expectations, standards and concerns². Menopause is the physiological event in women's life. It is

defined as the permanent cessation of menstruation at the end of women's reproductive life, due to loss of ovarian follicular activity. It is the end point when final menstruation occurs³. It is a stage when the menstrual cycles stops for longer than 12 months and there is a drop in the level of oestrogen and progesterone, the two most important hormones in female body. During menopausal transition, there is a lot of fluctuation in hormone levels making the postmenopausal women susceptible to various mental and physical disorders⁴. It is linked with a variety of symptoms which vary in intensity from mild to severe, they include vasomotor symptoms such as hot flushes, night sweats, anxiety, depressive mood, irritability, genital symptoms like dysuria, dyspareunia, recurrent urinary tract infection, vaginal dryness, joint pain and loss of sexual desire⁵. The most commonly identified psychological symptoms which are frequently observed in women with menopause include irritability, fatigue and anxiety. Few symptoms associated with changing hormone levels are linearly connected with estrogen depletion. Hot flashes, night sweats, and vaginal atrophy resulting in vaginal dryness are significantly correlated with changing levels of sex hormones⁶. Other symptoms, such as sleep disturbances, fatigue, anxiety, and weight gain, although common in case of menopausal experience, but remain multi factorial in etiological aspects and may occur in non-postmenopausal women as well. Studies established that most women experience at least one or more of these symptoms as they transition through the postmenopausal stage⁷.

Quality of life is a broad, multidimensional theory that requires a specific description in the medical literature. The World Health Organization has determined it as individuals' comprehension of their condition in life with regards to the context of the culture and value systems in which they exist and concerning their goals, expectations, standards, and concerns⁸. Quality of life points to descend in midlife women, and there is a necessity to determine what part, if any, manifestations commonly associated with the development to menopause and early postmenopausal play in

this phenomenon⁹. Quality of life is an imperative outcome measure of health care, and conceding the impact of menopause on quality of life is a critically significant part of the care of symptomatic postmenopausal women¹⁰. The study of quality of life in postmenopausal women has become an essential component in clinical practices. Several studies conducted in the past which studied the quality of life of postmenopausal women were conducted in developed countries with diverse socio-cultural realities, which might influence the discernment of the quality of life along with the experience of menopausal symptoms. Very limited information exists about the quality of life of postmenopausal women in developing countries.

2. OBJECTIVES:

To assess the Quality of Life of the Postmenopausal Women with diabetes

To estimate the prevalence of osteoporosis in Diabetic postmenopausal women, categorized into three groups: Normal, Osteopenia and Osteoporotic groups

3. MATERIALS AND METHOD

Patient profile forms: Used to collect the information about patient clinical condition.

1. Case Report
2. Subjective evidence
3. Objective evidence
4. Physician interaction
5. Qualitative Ultrasonometer (Achilles Ultrasonometer)
6. Menopause specific quality of life questionnaire (MENQOL)

3.1. Study site: Both in and out Patients who are willing to participate in the study from orthopedic and general medicine department in Malla Reddy Hospital, Suraram cross road, Jeedimetla, Hyderabad, Telangana.

3.2. Study period: The study will be conducted for a period of 6 months i.e., from January 2018 to June 2018.

3.3. Study design: A Prospective, Interventional and Comparative study was conducted among both in patient and outpatient – diabetic postmenopausal subjects, who are willing to participate from Orthopedic, General Medicine, Obstetrics and Gynecology department in Malla Reddy Hospital, Suraram,

Jeedimetla, Hyderabad, Telangana. The study population was recruited based upon the inclusion criteria; Diabetic Postmenopausal women age group more than 45 Years of all weight groups and Postmenopausal women using either insulin or oral hypoglycemic agents.

3.4. Sample Size: 600 Diabetic Postmenopausal Women

3.5. Bone Mass Measurements: Achilles ultrasonometer was used to measure the bone mineral density (BMD). The measurement of heel is done as its bone composition is more similar to that of the spine and hip, where osteoporotic fractures occur most. Ultrasound does not travel well through air. During an Achilles test, it is observed that the warm water fills membranes which then contact your heel to provide a path for the ultrasound energy to follow. Isopropyl alcohol is used to provide coupling between heel and the membranes.

A bone mineral density (BMD) is a diagnostic test which enables to measure the density of calcium along with other types of minerals which are present in any specific area of the bone. With increase in the age, bones become thinner (Osteopenia) as they lose calcium and also the deterioration of existing bone tissue occurs faster than the formation of a new bone. Bone mineral density tests are used to detect bone loss, Osteopenia and osteoporosis¹³. It determines the efficacies of those medications indicated for osteoporosis, whether being effective and moreover predict the risk of future bone fractures. The results of the test are usually reported as T-score and Z-score. This test also gives the values of Stiffness Index, BUA (broadband ultrasonic attenuation)¹¹. The QUS-score measurements were categorized into three groups (normal BMD, osteopenia and osteoporosis) according to the World Health Organization (WHO) criteria which have been standardized by the manufacturer for Asian population. Osteoporosis, osteopenia and normal conditions are identified as (T-score \leq -2.5 SD), (T-score between -1.0 and -2.5) and (T-score $>$ -1.0) below the healthy young adult reference mean, respectively¹². In addition, osteoporotic conditions of the diabetic postmenopausal

women patients were stratified into two groups: a normal group (low risk for abnormal BMD with T-score $>$ -1) and an osteoporotic condition group (who are categorized as high risk for abnormal BMD with T-score \leq -1 (i.e. osteopenia and osteoporosis).¹³

3.6. Tools:

Tools for data collection were consisting of:-

A - Patient profile forms: was designed by the researchers and it includes data about women's socio-demographic data: financial status, profession & educational status, menstrual status.etc...

B- **Menopause specific quality of life questionnaire (MENQOL)**. It is a self-report quantification evaluating the ubiquity and extremity of menopause symptoms and the degree to which they adversely influence women's living devised by (Hilditch JR, Lewis J)¹⁴. The questionnaire consists of 29 items divided into four domains: vasomotor (three items), psychosocial (seven items), and physical (16 items) and sexual (three items), the vasomotor domain determines hot flushes, night sweats, and sweating. The psychosocial domain evaluates the psychological well-being of the individual by incorporating details regarding anxiousness, memory, and feeling "blue". The physical domain evaluates items such as flatulence, bloating, pain, tiredness, sleeping, energy, and weight gain. The sexual domain probes about changes in sexual desire, vaginal dryness, and intimacy. The systematic scoring for each of the four MENQOL domains is similar. The seven-point Likert scale utilized during the administration of the MENQOL is switched for scoring and data interpretation. For each of the 29 items, this seven-point Likert scale is turned to an eight-point scale, ranging from 1 to 8. A "one" is equivalent to a woman acknowledging "no", indicating she has not experienced this symptom in the past month. A "two" indicates that the woman endured the symptom, but it was not at all vexatious. Scores "three" through "eight" indicate rising levels of distress experienced from the symptom, and correspond to the "1" through "6". The score by domain is the mean of the turned item scores forming that domain and ranges from 1- 8. Severities of menopause

symptoms scoring system as the following, Score range from 2-4 consider mild, score range from 5-6 moderate, and score range from 7-8 severe symptoms

3.7. Validity and reliability

To evaluate the proportion credibility of tools, the researchers affirm that details of an instrument sufficiently outline what is supposed to measure by presented it to 3 experts from obstetrics and Gynecology nursing) who conducted face and content validity of all items. All recommended modifications were performed. Also using *Menopause specific quality of life questionnaire (MENQOL)* is contemplating stander proof support the validity of the tools. The test-retest reliability for MENQOL questionnaires was good whether the interval between testing was one 1day. Domain internal consistency was measured for each questionnaire using Cronbach's alpha and the degree of reliability alpha precision 88% of the study.

3.8.Pilot Study:

To evaluate the clarity, reliability, and applicability of the study tools utilized in the investigation for data acquisition; a pilot study was carried with a characteristic sample of Twenty Five. The results of the pilot study aided in the significant modifications of the tools in which exclusion of unrequired or duplicated questions, adding missed questions was done. The women included in the pilot study were excluded from the study subjects.

3.9. Procedures:

The researchers visited the gynecological ward of the study setting two days per week, from 9.00 a.m. to 1.00 p.m. The study was conducted during the period from January 2018 to June 2019. The researchers presented themselves and succinctly described the purpose of the study to the included women who satisfied the standards for inclusion in the sample. All women were notified that participation is voluntary. Oral assent of women to participate in the study was obtained. Alterations of the tools were produced respectively. Data collection was carried out through interviews with women; Time spent for each interview ranged from 20 to 30

minutes with each woman applying the earlier specified tool. The researchers collect data related to socio-demographic data, menstruation state, and menopausal symptoms.

3.10. Ethical Consideration:

Before the initiation of this study, all aspects of the study protocol were approved by the Institution Ethics Committee (IEC) of MRH (No.IEC.IEC/MRIMS/25/2019). All subjects were provided with a written informed consent form prior to participation in this study. All personal information collected was considered confidential.

3.11. Statistical Analysis:

Data was collected, coded, tabulated and analyzed, using the SPSS computer application for statistical analysis. Descriptive statistics was used to calculate percentages, frequencies, Mean and standard deviations, Chi Square (χ^2), T. test are used to estimate the statistical significant differences. A significant p-value will be considered when p less than 0.05 and it will be considered highly significant when p-value less than or equal 0.01.

4. RESULTS

4.1. Overall Response Rate

A total of number of 600 postmenopausal women with Diabetes Mellitus were recruited from both in patient and out patients of Orthopaedic, General Medicine and Obstructive and Gynecology department. Out of the 600 patients, 80 patients were excluded due to unavailability of data (n=80). Hence out of 520 patients, 114 patients were of normal bone density, whereas 317 patients were of Osteopenia condition and 89 patients were of Osteoporosis condition: based on Bone Mineral Density assessment.

4.2. Severity of menopausal symptoms

Physical and psychosocial symptoms were more commonly reported among the women Table 1. Feeling tired or worn out 410 (78.8%), decrease in physical strength 415 (79.8%), stamina 298 (57.3%), muscles and joint pain 387 (74.4%), aches in the back of neck or head 424 (81.5%), flatulence or gas pain 361 (69.4%), low back ache 294 (56.6%), lack of energy 150 (28.9%), difficulty in sleeping 229 (44.0%), feeling bloated 183 (35.1%), involuntary urination while laughing, coughing

124 (23.8%) were reported by over a half of the women in physical domain. The major symptoms in psychosocial domain were poor memory 325 (62.5%), accomplishing less than they used to 196 (37.7%), feeling anxious or nervous 280 (53.8%). Experiences of vasomotor symptoms were relatively less with 149 (28.6%) reporting hot flushes and 95 (18.2%) night sweats.

4.3. Quality of life

The median of the each domain of MENQOL was used as the overall subscale score. Table-1 lists the scores of four domains by diabetic

postmenopausal women status. The overall median score of QOL with respect to the physical and psychosocial domains were higher than the vasomotor and sexual domains. Comparatively the scores of vasomotor domain were statistically significantly different in postmenopausal women group $P < 0.001$ than the premenopausal women group and physical and psychological domain scores were also statistically significantly different in diabetic postmenopausal women group with $P < 0.02$ and $P < 0.01$ respectively.

Table 1: Distribution of the women regarding to severity of menopausal symptoms

Symptoms	No (%) (n=520)	95 % CI
Vasomotor -		
Hot flushes	149 (28.6)	61 , 13
Night sweats	95 (18.2)	38, 8
Sweating	241 (46.3)	98, 51
Psychosocial –		
Being dissatisfied with my personal life	371 (71.3)	52, 74
Feeling anxious or nervous	280 (53.8)	114, 67
Experiencing poor memory	325 (62.5)	133, 85
Accomplishing less than I used to	196 (37.7)	80, 33
Feeling depressed, down or blue	348 (66.9)	142, 95
Being impatient with other people	224 (43.0)	91, 44
Feelings of wanting to be alone	210 (40.3)	86, 38
3.Physical -	279 (53.6)	114, 67
Flatulence (wind)or gas pains	361 (69.4)	148, 100
Aching in muscle & joints	387 (74.4)	158, 111
Feeling tired or worn out	410 (78.8)	168, 120
Difficulty sleeping	229 (44.0)	93, 46
Aches in back of neck or head	424 (81.5)	173, 126
Decrease in physical Strength	415 (79.8)	170, 122
Decrease in stamina	298 (57.3)	122, 74
Feeling a lack of energy	150 (28.9)	61, 14
Drying skin, Weight gain	173 (33.2)	70, 23
Increased facial hair	21 (4.0)	8, 38
Changes in appearance texture or tone of your skin	132 (25.3)	54, 6
Feeling bloated	183 (35.1)	75, 27
Low backache	294 (56.6)	120, 73
Frequent urination	405 (77.8)	166, 18
Involuntary urination when laughing or coughing	124 (23.8)	114, 67
4. Sexual		
Change in your sexual desire	96 (18.4)	50, 35
Vaginal dryness during Intercourse	158 (30.3)	64, 17
Avoiding intimacy	92 (17.7)	37, 95

5. DISCUSSION

5.1. Prevalence of Osteoporotic Conditions

The determined prevalence of osteoporosis in the present study was lower, when compared with other studies as well as other western country. Therefore, it heeds that osteoporosis in diabetic postmenopausal women is under diagnosed and overlooked until now.

5.2. Severity of Menopausal Symptoms

As regards to the severity level of menopausal symptoms, the most severe symptoms in vasomotor, psychosocial, physical and sexual domains were hot flushes, experiencing poor memory, being dissatisfied with their personal life, low backache, and change in their sexual desire, while the mild symptoms in these domains were night sweats, sweating, feeling anxious or nervous, flatulence or gas pains, aches in the back of neck or head, increased facial hair and avoiding intimacy. As well as In Malaysia, Jahanfar et al. (2006)¹⁸ who stated that the common frequent manifestations occurred to be joint and muscle discomfort (84.3%), accompanied by anxiety (71.4%), physical and mental discomfort (67.2%), hot flushes and sweating (67.1%). These variances in incidences of symptoms may be associated with differences in race, lifestyle, culture, genetics, and diet. In the study carried by Waidyasekera et al. (2009)¹⁹ they reported that the joint and muscle discomfort, physical and mental exhaustion and hot flashes were the most widespread menopausal symptoms. This similar to Gharaibeh et al. (2010)²⁰ they found that vasomotor symptoms were reported to have the highest scores as hot flushes and night sweating. In addition, Ashrafi et al. (2010)²¹ determined that night sweats, joint and muscle pain and hot flashes are the most common symptoms associated with menopause in Iranian women. These findings were also noted by Rahman et al. (2010)²² indicated that the frequency of sexual problems, bladder problems, and vaginal dryness were experienced mainly by postmenopausal group of women and it was also significant statistically in comparison to another menopausal status.

The most prevalent psychosocial symptom in the present study was; poor memory that

accords with the conclusions of many studies, which showed that the most common and severe symptom that was reported by women was poor memory²³⁻²⁴. These repudiate the results of the study performed by Kalahroudi MA et al. (2012)²⁵ They reported that the most prevailing psychosocial mark was accomplishing less than it used to, but the most severe symptom was feeling anxious or nervous was contradicted with the results of our study. Concerning the physical domain, our study explicated that majority of the women had a malady of severe low backache while a study was done by Kalahroudi MA et al (2012)²⁵ reported that feeling a lack of energy is the most complaints and the most severe symptom was aching muscles or joints while somatic and psychological symptoms are not related to menopausal status because these symptoms are multi-factorial, rather than due to hormonal imbalance and middle-aged women usually experience these symptoms due to health predicaments related with aging.

Also, Nisar N. and Ahmed S N., (2009)²⁶ stated that the frequency of physical and sexual symptoms was 99% and 66% respectively. Concerning sexual domains current study results revealed that 60.5 % of women had a change in sexual desire, and avoiding intimacy', but a 'change in sexual desire' was more severe in 36.8 % of women than other sexual related symptoms. While in the study done by. Sedigheh, et al (2010)²⁷, indicated that 92% of women reported avoiding intimacy. It was also observed that in Ecuadorian women, the particular rate was only 76.5%, and in Korean women the most common symptom was a change in sexual desire' which was severe in 27.1% of cases. Furthermore, in the Singaporean women the most common and more severe symptom was avoidance of intimacy. Also results of the study done by Paulose B, et al. (2018)²⁸ indicated that the most commonly experienced symptom was hot flashes, with 73.2% of women currently experiencing that symptom. Evaluating the percentage n decreasing order, it was identified that the remaining frequencies were registered as fatigue that accounts to (58.0%), sleep disturbances (56.3%), anxiety (53.6%), irritability (51.8%), weight gain (51.8%),

vaginal dryness (48.2%), and urinary incontinence (32.1%).

6. CONCLUSION:

This study found that diabetic postmenopausal women patients were having a high risk of abnormal BMD. As there is evidence that osteoporosis is a preventable disease, the screening, identification and prevention of potential risk factors for osteoporosis in diabetic postmenopausal women patients is pivotal. The contemporaneous observations of the presented study infer regarding the highest degree of featured symptoms from the computed data of classification types: In consideration of vasomotor symptoms, sweating accounted as pivotal manifestation. Whereas the highest number of subjects gauged for dissatisfaction in personal life being observed in category of Psychological symptoms. In the emphasis of physical manifestation, majority subjects attributed to the declination of physical strength and tiredness (fatigue). Lastly, vaginal dryness during intercourse signifies as the major menopausal related sexual manifestation. On the comparative grounds of mean score, the physical and vasomotor domain categories were having relative higher values in diabetic postmenopausal women. From the evidence of the enumerated scores of each domain further indicates that menopausal symptoms were corresponding with the decrease in women quality of life. Furthermore, it necessitates with the concern of health needs amongst the diabetic post-menopausal women.

7. Human and Animal Rights: No animals were used in this research. The study also involved the quantitative ultrasound measurement from human subjects, only after obtaining written informed consent. All the study procedures were conducted in compliance with the principles laid in declaration of Helsinki in 1975 and revised in 1983.

8. Consent for Publication: An informed consent was obtained from the patients when they were enrolled.

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