Assessment of malnutrition status of post-menopausal women attending outpatient clinic at Zagazig University Hospital Sharkia Governorate.

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Abstract:
Background: Malnutrition is a comprehensive term refers to any imbalance in nutrition; from over-nutrition often seen in the developed world, to under-nutrition seen in many developing countries. **Aim of the study:** was to assess the malnutrition status in post-menopausal women. **Subjects and Methods: Research design:** A descriptive observational study. **Setting:** Outpatient clinics in Zagazig university hospitals, Sharkia Governorate. **Subjects:** included 198 Post-menopausal female patients. **Tools of data collection:** two tools of data collection were used. Structured Interviewing questionnaire, Screening scales An Arabic version of Mini Nutritional Assessment questionnaire (MNA),the Malnutrition Universal Screening Tool (MUST). **Results:** the majority of the sample main age was (57±7.14) , married (8٠.٨%) and non- smoker(89.٤%) and not using hormone replacement therapy (87.5%). working in inactive work (54.5%), not practicing regular exercise(77.0%), nearly half of them were university educated (54.1%), the malnutrition, according to tools (MNA) score, was (60.6 %) , (9.1 %), &(31.7%) normal , medium risk and high risk of malnutrition respectively , but malnutrition according to Universal screening tool (MUST) score was (60.6%), (9.2%) & (29.2%) normal, medium risk and high risk of malnutrition. **Conclusion:** Nearly half of the sample had Malnutrition according to tools (MNA) score, and Universal screening tool (MUST). According to Mini Nutritional assessment tool (MNA), it has statistically significant in relation to age, weight, & BMI. **Recommendation:** Malnutrition assessment should be done by the primary health care team, especially nurses to all of the examined menopausal women. There should be a Health education program for all member of health care setting about assessment of undernourishment and the early detection of malnutrition. Planning of health education program about balanced diet prevention that should be implemented in all health care setting to provide care for old menopausal women.

Key words: Nutrition, Prediction, Assessment, Malnutrition, Post-menopausal.

Introduction:

Malnutrition is a broad term refers to any imbalance in nutrition; from over-nutrition often seen in the developed world, to under-nutrition seen in many developing countries, but also in hospitals and residential care facilities in developed nations. Malnutrition can develop as a result of deficiency in dietary intake, increased requirements associated with a disease state, from complications of an underlying illness such as reduced absorption and excessive nutrient losses, or from a mixture of these above-mentioned factors.(1)

Nutrition screening has been defined by the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) as “a process to identify an individual who is malnourished or who is at risk for malnutrition to define if a detailed nutrition assessment is indicated. (2,3)In the United States, the Joint Commission mandates nutrition screening within 24 hours of admission to an acute care center.(3) Malnutrition can sign to, impaired physical and mental development; reduce productivity and poor immunity. (4-7)

The goal of nutrition assessment is to measure any specific nutrition risk(s) or clear presence of malnutrition.(8) Nutrition assessments for improving nutrition status or a recommendation for rescreening.(8-10)

Since elderly people are at high risk of malnutrition; a variety of factors including sensory losses, anorexia, chewing and swallowing problems ,chronic and acute diseases and multi-medication may compromise dietary intake and lead to nutritional deficiencies and malnutrition.[11, 12] The prevalence of undernourishment rises along with the number of chronic diseases and medicines taken on a daily basis. [13]

Globally, as much as 868 million people were affected by chronic under nutrition between 2010 and 2012, with most of them 852 million or about 15% of the world's population living in developing regions. [14] In Europe, about 33 million people are exposed to the risk of undernourishment. studies show that from this group, 10% are individuals over 65 years old. The frequency of undernourishment and the risk of undernourishment in elderly people remaining in the home environment are estimated at about 2–30%.[15 –19] According to study in Egypt, 56% of participants were at high risk of malnutrition , 18% were at moderate risk of malnutrition, and 26% had normal nutrition. [13]

The menopause is a mainly important time in a woman's life, and is a natural part of a women's life. It is the phase when she no longer experiences menstruation. The menopausal 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 point. [20]

Worldwide in 1998, there were more than 477 million postmenopausal women in the world, and approximately 9% were expected to live to age 80years. By 2025, the number of postmenopausal women is expected to rise to 1.1 billion. Life expectancy for women worldwide was 65 years in 1998 (79 y in more developed countries) [21, 22]

Significance of the study:

Community health nurses are in an excellent position to recognize older people at nutritional risk and thereby to prevent under-nutrition; malnutrition is an essential concern for post-menopausal and elderly women. It is common in both developing and developed countries and may have a tremendous impact on the morbidity and mortality in these age groups, so this study was carried out to assess nutritional status in outpatient clinic.

Aim of the study:

The aim of the current study was to: assess the malnutrition status in post-menopausal women

Research question:

What is the prevalence of malnutrition status of post-menopausal women?

Subjects and Methods:

Research design:

A descriptive observational design was used in this study to achieve the stated aim.

Study setting:

The study was conducted at outpatient clinics in Zagazig University hospital Sharkia Governorate.

Study subjects:

One hundred ninety eight women aged (40 ≥ years) were chosen by a systematic random sampling procedure from attendants of outpatient clinic , on alternating days in a rotatory way of every working week in proportion to size. All sampled women were invited to participate in the study. The sample size was 198 determined by soft –war Epi info version 6. the estimated sample size is 198 subjects. This outpatient clinic was selected as high rate of patients in this clinic and wide range of age among these women.

Tools of data collection:

Two tools were used for data collection First Structured Interviewing schedule: which developed by the researcher after reviewing related literature and included two parts :a) Socio-demographic characteristics of women such as: age, work type, education, marital status, smoking, and practicing exercise and residence. The second part involved medical history of chronic diseases including diabetes, Hypertension, etc.)

Second Screening scales: included two parts.

1) An Arabic version of Mini Nutritional Assessment questionnaire (MNA), which consists of 18 items and takes less than 15 minutes to perform. (MNA) test was designed for outpatient screening. The subjective global assessment relies on physical signs of under nutrition and patient history and does not use laboratory findings. The MNA tools cover the following: anthropometric assessment(BMI ,mid-arm circumference, calf circumference, loss of weight during last 3 months), global evaluation (autonomous living, intake of more than3 drugs per day, mobility, psychological stress or acute disease during last 3 months, neuropsychological assessment, pressure sore or ulcer),dietetic assessment(number of complete meals per day, protein intake, fruits or vegetables at least twice daily ,decline in food intake over the past three months, daily consumption of fluid ,mood of eating)and subjective assessment (subjective nutritional assessment ,subjective health assessment**).** Scoring system: maximum score was 30 points. It distributed as: i) 24-30 points is considered as normal nutritional status ii) 17-23.5 is considered at risk of malnutrition iii) less than 17 is considered as malnourished. [21, 22]

2) The Malnutrition Universal Screening Tool (MUST) involves of three items as BMI, weight loss in the prior 3-6 months and acute disease effect. Each of these items includes a score between 0 and 2.

A score of 0 specifies low risk of under nutrition, a score of 1 medium risk and a score of 2 or more specifies high risk of under nutrition [3] The final risk category is linked to a care plan [4] . In recent times MUST has been tested as a self-screening tool and the results indicated that the patients self-screening results have good agreement with the results screened by health professionals [5]. MUST has an opposite scoring system (higher score representing higher risk) and has a maximum risk score of 6 and a minimum of 0. Those who score 2 or more are at high risk, 1 at moderate risk and 0 at low risk of malnutrition. [23, 24]

Content Validity and reliability:

Arabic versions of Mini Nutritional Assessment questionnaire (MNA full) form and Malnutrition Universal Screening Tool (MUST) were used by the corresponding author and this Arabic version was revised by five experts in the field of community nursing and medicine, and necessary modifications were done. The tools were tested using the internal consistency method. It proved to be high with Cronbach's alpha reliability coefficients 0.902. [21]

Field work:

The study was conducted to collect data between Jun 2015 and December 2015.

- **Interviewing:**

Focused on obtaining socio-demographic characteristics and obstetric history of the participants, the researcher met the participant at waiting room at previous mentioned setting. All women were interviewed individually to collect data &asked questions in Arabic, the interview take 10 -15 minute, the investigator visit the clinic twice per week , weight and

height were measured to them ,accuracy and completeness of data were reviewed.

Pilot study:

Pilot study was conducted on 10% of sample size. Those who shared in the pilot study was excluded from total study sample, and any necessary modifications as simplifying some terms to be understandable to women and changing the order of questions were done, also served to assess time needed for data collection.

Administrative and ethical considerations:

Official permissions were obtained, an informed oral consent was obtained from all participants which addresses study title, aim of the study and detailed procedure that would be done. Confidentiality was ensured, each woman was informed that participation is voluntary and free to withdraw from the study at any time.

Statistical analysis:

Data were collected and analysis was done using SPSS version 16.0 . Data were presented using descriptive statistics in the form of percentages and frequencies for qualitative variables, and means and standard deviations for quantitative variables. Categorical variables were matched using chi-square test. Statistical significance was considered at p-value <0.05. Cohen's Kappa test was used to assess agreement between MNA and MUST .To test the Concurrent validity between MNA and MUST, agreement and chance-corrected agreement (k) of malnutrition risk categorization were assessed. which characterized a Kappa of <0 as no agreement, 0-0.20 as slight agreement, 0.21-0.40 as fair agreement, from 0.41-0.60 as moderate agreement, 0.61-0.80 as substantial agreement, and 0.81-1 as almost perfect agreement.

Results:

The study included 198 adults' post-menopausal woman, and aged of ≥45 year's olds from outpatient . The majority of the sample main age was 57±7.14 , married 8٠.8% , and non- smoker(89.4%) and not using hormone replacement therapy 87.5% . However more than half of them working in inactive work 54.5% not practicing regular exercise 77.0% , near half of them were university education 54.1% **Table (1)** .

Regarding assessment of malnutrition scores revealed that 31.7 % of the sample had high risk of malnutrition according to (MNA) score, and 9.1% had medium risk . However, Malnutrition according to Universal screening tool (MUST) revealed that and 29.2 % had high risk of malnutrition and 9.1% had medium risk score. **Table (2).**

Table (3): indicates statistically significant difference between participant's characteristics as age, weight, BMI. With Mini Nutritional assessment tool (MNA) * (P –<0.01).

Table 4): Shows Pearson's correlation coefficients (r value) between Mini Nutritional Assessment Tool (MNA) and Malnutrition Universal screening tool (MUST) with anthropometric parameter, age, height and BMI, Indicated that there was a high significant correlation between age ,weight and BMI , also regarding MUST with MNA , but there was no correlation between height and MNA , nor height and MUST . r =<0.01 and P =<0.05.

Table(5): illustrates that there was significant agreement between mini Nutritional assessment tool (MNA) and Malnutrition Universal Screening Tool (MUST) in nutritional assessment of studied sample, P – value <0.05.

Discussion:

The menopausal changes have an effect on food intake and food selections of menopausal women. Shikha etal [(19)] is recognized the fact that a well-balanced diet is essential for good health and to fight some of the complications of menopause

to certain level, Various nutritional risks as physiological causes , diseases, intake of excess medicines, disabilities , hearing optical, economical causes like reduction of income, getting less importance and attention from family members, religious causes including avoidance of foods at particular days and objection to some foods, psychological causes including depression, loneliness and insecurity.

The present study revealed that the mean age of the postmenopausal women at outpatient medical clinic ranged from ≥ 45 to 84 with mean and standard deviation 56 ± 7.14 and all of them were females, more than half of them were of high degree education (university and post graduate) and married, nonsmoker and working in sedentary work, also the majority of women not practicing regular exercise, none of them using hormone replacement therapy.

This study is contracted with Emam etal [(14)] who conducted his study in Zagazig university hospital he reported its finding that majority of participant were illiterate and none of them were on regular exercise, and more than half of them were widowed and, had low income.

The present study results were in line with the study of Beck etal [(26)] who reported that 38% of the patients with a mean age of 75 years coming from a Danish general practice obtained an MNA score of 17–23.5 points, indicating them to be at risk of malnutrition.

Concerning the malnutrition among the study subjects nearly half of the sample had malnutrition according to tools (MNA) score, however (9.2 %) had medium risk and one third of them had high risk of malnutrition according to Universal screening tool (MUST). These results are in agreement with Söderström[(28)] who revealed that more than third of the sample were well-nourished, and more than half of them were at risk of malnutrition.

Similar are the results of Maries etal[(38)] who reported that malnutrition present in 6% of the population and nearly half of them belonged to at risk group in old age homes of Somerset, UK, he also found difference in geographical, social-economic and socio cultural settings are the probable reasons for such differences .

Another study conducted by Lopez and etal[(30)] who revealed that according to MNA score, 7.9% of older women were malnourished, proportion much lower than that of the present study and 61.8% were at risk of malnutrition, similar to that of the present study .In a study conducted by Pai MK[(31)] between elderly population living at old age homes and those who reside outside in Mangalore, 19.4% of the population was malnourished and 57.4% were at risk of malnutrition, thus not agree to the present study.

On the other hand, Griep **[(32)]** also reported that 17-23% are at risk among elderly female residents of old age homes Similar results were reported by Agnieszka etal [(16)] who asserted that the mean of the obtained points in the MNA scale for individuals living with the family was 24.28 ±2.42 and were higher than in those living in care centers. The well nutrition of elders living with the family may result from sharing meals together with the family. Rasheed and Wood [(33)] informed that elderly persons can participate in the preparation of meals and do not have to do the shopping; however, in the care center the residents eat meals in the canteen with other individuals and lack the feeling of intimacy, especially when having difficulty with the self-service.

These results are very similar to Donnie etal and Morone etal[(37,39)] they reported that undernourishment is associated with numerous geriatric syndromes (depression, functional dependence, and coexisting diseases) having a significant influence on the subjective quality assessment of living in older age.

The present study was a contrast with Neelemaat etal and Soderhamn etal [34,36] who showed that malnutrition 70% of the study population was not at risk of malnutrition, 5% was at moderate risk of malnutrition and 25% was at severe risk of malnutrition.

Another recent study conducted in Makkah by Elmahamady [37], who found that among 102 recently hospitalized elderly and according to the mini nutritional assessment (MNA) tool, 22.6% were classified as malnourished, 57.8% were at risk of malnutrition, and 19.6% were well nourished. Also, another study conducted by Morais and etal [38] who found that 10.2% of elderly individuals were malnourished and 39.9% were at risk of malnutrition according to the MNA screening tool.

The current study was in harmony with Hajjar etal,[35] who stated that malnutrition is not just a problem amongst in-patients and care home residents .Same as Stratton, etal[39], who found that prevalence of malnutrition is also high among older people treated in the community 15% of older adults living in the community .However this study was in accordance with Rasheed &wood [33] who stated that MUST was used to categorize hospital outpatients and inpatients into two risk categories (low-risk and combined medium –risk +high-risk of malnutrition),the prevalence of malnutrition risk (medium +high) using 'MUST' ranged from 19–60 % across patient groups. On other hand Fadupin[13] who observed dissimilarities in prevalence rates of malnutrition among the different studies may be due to difference in selection criteria of elderly, different assessment tools, and differences in socio-demographic variable.

Regarding Pearson correlation coefficients between Mini Nutritional Assessment Tool (MNA) and anthropometric parameter, and Malnutrition Universal Screening Tool MUST, there was a significant correlation between ages, weight, BMI, MUST with MNA but there was no correlation between height and MNA.

As regard Pearson correlation coefficients between Malnutrition Universal Screening Tool MUST and anthropometric parameter, age, there was a significant correlation between age, weight, BMI and with MUST but there was no correlation between height and MUST.

Also the current study showed agreement between Mini Nutritional Assessment tool (MNA) and Malnutrition Universal screening tool (MUST) in nutritional assessment of studied sample there was a substantial(good) agreement between them p -value <0.05. These results was not in agreement with that of Stratton etal[39] who stated that the patients with MNA full form relative to MUST reflected in the low k value .

Cohen [25] reported that agreements between MNA and MUST were fair according to kappa test ,because agreement is affected by prevalence, it may be better to compare prevalence than kappa values between different studies. MNA classified more geriatric outpatients as malnourished than MUST. In addition, Omran and Morly [41] reported that MNA includes more items related to malnutrition and for that reason it is important to evaluate geriatric outpatients and the obtained insight in the most appropriate nutritional screening tool for this same patient group has led to implementation of MNA in the geriatric outpatient clinic .Another study conducted by Alan and Tsai[24] ,to find out Population-specific modifications of the short-form Mini Nutritional Assessment and Malnutrition Universal Screening Tool for elderly. Stratton etal [40] suggested that the MNA and the MUST tools identify considerably different individuals of the same group of patients at risk of malnutrition .

Conclusion:

In the light of this study it was concluded that nearly half of the sample had Malnutrition according to tools (MNA) score,

and Universal screening tool (MUST).The nutritional status assessed by Mini Nutritional assessment tool (MNA) it was affected by age, weight, BMI. There was a significant correlation between ages, weight, BMI, and MUST with MNA but there was no correlation between height and MNA. There was agreement between Mini Nutritional Assessment tool (MNA) and Malnutrition Universal screening tool (MUST) in nutritional assessment of studied sample ,there was a significant agreement between them , p -value <0.05

Recommendation:

Based on the study results the following recommendation can be suggested:

1- Malnutrition assessment by the primary health care team especially nurses in all of the examined menopausal women using MNA sheet for any chronic diseases.
2- Health education program to all member of health care setting about assessment of under nourishment and the early detection of malnutrition.
3- Planning of health education program about balanced diet prevention, restoration of normal nutritional status should be implemented in all health care setting to provide care for old menopausal women.

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Table (1): Characteristics of participants according to socio- demographic characteristic:

Post-menopausal No =198

Participants character	No.	%
Age in years:		
45-	98	49. 5
55-	75	37. 9
≥ 65	25	12. 6
Mean ± Standard deviation X±SD	57±7.14	
Education:		
Illiterate	20	10.1
Read &Write	6	3.0
Basic & Secondary	65	32.8
≥University	107	54.1
Marital status:		
Married	160	8.8
Single	4.5	4.5
Divorced	11	5.6
Widow	18	9.1
Working:		
Not working	62	31.3
Active work	108	54.5
Sedentary work	28	14.1
Regular exercise:		
Yes	45	22.7
No	153	77.3
Hormone replacement:		
Yes	25	12.6
No	173	87.4
Smoking:		
Smoking	21	10.6
Non-Smoking	177	89.4

Table (2): Characteristics of participants according Mini Nutritional Assessment Tool (MNA) & malnutrition Universal screening tool (MUST) Scoring:

Nutritional status using MNA	Total N=198 (%)	Nutritional status using MUST	Total N=198 (%)
Normal (S=24-30)	117(60.6 %)	low risk of malnutrition (Must=0)	118(61.6 %)
low risk of Malnutrition (s= 17-24)	18(9.1 %)	Medium risk of malnutrition (Must=1)	19(9.2%)
High risk of malnourished (S=<17	63 (31.7%)	High risk of malnutrition (Must ≥ 2)	61(29.2%)

Table (3): Relation between factors affecting malnutrition of participants according to Mini Nutritional assessment tool (MNA):

Participants characteristic	All women (n=198) Mean ± S.d.	MNA ≤23.5 (n=80) malnutrition (40.4%)	MNA>24 (n=118) normal (59.6%)	T-test	p-value
Age(years)	57.9±7.14	59.6±8.3	56.9±6.1	2.49	0.01*
Weight(KG)	85.7±17.48	75.1±15.9	88.6±16.3	5.08	0.00*
BMI(kg/m2)	33.96±6.71	30.8±6.3	36.5±5.8	6.45	0.00*

* (P =<0.01).

Table (4): Pearson's correlation coefficients (r value) between Mini Nutritional Assessment Tool (MNA) and Malnutrition Universal screening tool (MUST) with anthropometric parameter, age, height and BMI

Participants characteristic	MNA r Value*	P- Value	MUST r Value*	P- Value
Age	r -.265**	0.00	r.184**	0.04
Weight	r.420**	0.00	r -.384	0.00
Height in meter	r.082	0.24	r -.887	0.46
BMI	r.413**	0.00	r -.371	0.00
MUST	-.784**	_____	-.784**	-------

*Spearman's Correlation **=<0.01 P =<0.05.

Table (5) Agreement between Mini Nutritional Assessment tool (MNA) and Malnutrition Universal Screening Tool (MUST):

Nutritional status Using MUST	Nutritional status Using MNA				Kappa Agreement	P VALUE
	Normal	At risk of malnutrition	Malnutrition	No(198) %		
low risk of Malnutrition	119(82.7)	24(16.6)	1(0.7)	144(100.0)	.465	0.00
Medium risk of malnutrition	0(.0)	3(100.0)	0(.0)	3(100.0)		
High risk of Malnutrition	3(5.9)	27(52.9)	21(41.2)	51(100.0)		

P – Value <0.05.

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