PREVALENCE AND RELATED FACTORS OF FATIGUE AMONG MIDDLE-AGED AND ELDERLY FEMALE

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ABSTRACT:

Introduction:

Fatigue is a nonspecific and widespread complaint effecting people around the globe. Many researches are available related to fatigue still limited information is available on the topic of prevalence of fatigue among middle-aged women in relation to socioeconomic status, health related variables, and gynecological history especially in Pakistan.

The objectives of our study were 1) determine prevalence of fatigue among middle-aged and elderly females. 2) establish association of fatigue with socioeconomic status, health related variables, and gynecological history 3) identify determinants of fatigue.

Methodology:

In this cross-sectional study, total 120 females were selected through convenient sampling with the age of 45 years and elderly. Fatigue level was assessed with the help of Chalder Fatigue Scale (CFS) while information regarding gynecological history, socio-demographics and health-related variables were gathered from self-administered questionnaire.

Results:

The prevalence of fatigue among 45 years and elderly females were found to be 63.3%. Test of difference showed that females with higher age, married, employed, hypertensive, postmenopausal and more than 4 numbers of children were at a greater risk of fatigue. Multiple Logistic Regression Analysis Identified that marital status, physical exercise and higher BMI were found to be the determinants of fatigue.

Conclusion:

The study findings suggested that menopausal status and gynecological history has an impact on fatigue level among females. These findings identified many risk factors of fatigue which will help in implementing targeted interventions for middle-aged and elderly females.

Keywords: fatigue, determinants of fatigues, middle- aged women, BMI.

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INTRODUCTION

There are number of people who are suffering with fatigue, at different phases of life due to personal relations, strong competition and different social pressures.(1)

Fatigue is defined as a condition of decreased capacity for physical and mental activity due to unavailability of energy required to perform physical activity and sometimes can't relieve by rest.(2) Prolong fatigue can predict future mortality and morbidity (3). Fatigue impairs person's quality of life (4) by negatively effecting person's behavioral, emotional and cognitive life.

There are multiple causes of fatigue; it includes medical causes such as anemia, thyroid disorder, heart diseases and diabetes (6). Lifestyle- related causes includes lack of sleep, sleep disturbances, absence of regular exercise, sedentary lifestyle and inappropriate diet. The third cause could be workplace related like shift work, unemployment and workplace stress.

Fatigue among females is higher as compare to male because of their physiological characteristics and social functions(6). Decrease estrogen level also effect the normal functioning of heart and lowers the bone mass density. BMI is also associated with fatigability. Obese individuals are said to become more fatigue with disturb sleep patterns and are more physically inactive.

Number of off springs can cause cardiovascular diseases among females as 4 or more number of live births increase chances to develop aortic wall thickness, left ventricular abnormality and decrease ejection fraction in future (7). These CVDs increases the chances of fatigability.

Limited information is available on the topic of prevalence of fatigue among middle-aged women in relation to socioeconomic status, health related variables, and gynecological history especially in Pakistan.

The objective of our study was 1) to find out prevalence of fatigue among middle-aged and elderly females 2) To determine association of fatigue with gynecological history 3) To identify determinants of fatigue.

MATERIAL AND METHODS

This study was a cross-sectional survey which was conducted among females living in Karachi, Pakistan. Duration of study was of six month after the approval of synopsis. Our sample size comprised of 120 females. Those participants who met our inclusion and exclusion criteria were selected to become part of research. With the help of non-probability convenient sampling desired number of participants were selected. Informed consents were obtained from the participants.

➢ Inclusion Criteria:

All the females who will be 45 years and older , willingly participating.

➢ Exclusion Criteria:

Any female with mental or physical disability, on hormone replacement therapy, diseases such as Multiple Sclerosis or Myasthenia Gravis.

➢ Instrument/Tool Used:

Tool consists of two sections:

❖ Section A:

- Socio-demographic Characteristics including age, marital status, occupation status.

- Health related variables were physical activity, self-reported diseases (including hypertension, diabetes, heart diseases, lung diseases or other chronic condition), BMI, Hospitalization in last year.

Physical activity criteria included any exercise (walking, aerobics) which is done regularly for 20 minutes instead of daily home activity and office work. BMI was measured as weight (kg) divided by square of height (m²). BMI categories (32) were defined as normal weight (18.5-24.9), over weight (25.00-29.9) and obese (≥30.0).

- <u>Gynecological history</u> included questions related to age of menarche, menopause status and number of live births.

❖ Section B:

Chalder T et al. through their research developed 11-item Chalder Fatigue Scale. This self-reported fatigue scale was developed in 1992 (1). The intended purpose of this scale was to assess the symptoms of fatigue severity, detection of mental and physical fatigue. Chalder Fatigue Scale comprises of 11-items which can assess physical (1-7 items) and mental (8-11 items) fatigue in general and clinical population with good reliability(r=0.82) and validity. C.F.S. has 75.5% sensitivity and 74.5% specificity.

This scale can be scored "bimodally" or "likert" style. Bimodal represents column as 0,0,1,1 and a range of 0-11 with total of 4 or more represents fatigability and this style is used in our study.

➢ Procedure:

After the approval of IRB, data collection was started. We approached females who were working in schools as well as house wives from different apartments on individual basis. Firstly, participants were informed briefly about our survey, contents of

questionnaire. Those who gave consent voluntarily and were fulfilling our inclusion and exclusion criteria were selected. BMI was calculated from each participant with inch tape and weight machine.

➢ **Data Analysis:**

Means and standard deviation, frequency, percentages and bar charts were obtained for demographical characteristics. Chi-square and T-test was used to find out difference among categorical and continuous variables respectively. Multiple logistic regressions was used to determine predictors of fatigue. Two tailed analyses were performed with level of significant set at $p<0.05$. All statistical analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 22.0(SPSS Inc., Chicago, IL, USA).

➢ **Ethical approval:**

Ethical approval for this research was received from IRB of JPMC.

RESULT

➤ Illustration of Sample:

There were no missing data on CFS so questionnaires of all 120 participants were included for data analysis. Response rate of our questionnaire was 92.3%. According to results out of 120 females, 109 (90.8%) were of age ranging from 45-59. Further social-demographics, health related variables and gynecological data of the samples is mention in detail in Table I.

➤ Prevalence of Fatigue:

According to 120 women the prevalence of fatigue among 45 and elderly females was found to be 63.3% see Table I. Prevalence of fatigue was compared with different BMI categories, see Fig 1.

➤ Difference of Fatigue with Demographics:

Chi-square and T-test were applied on categorical and continuous variables respectively. Marital status (p-value=0.038) and Physical exercise (p-value=0.017) were significantly associated with fatigue which is mentioned in Table I. (For other variables refer to Table I)

➤ Fatigue in relation with Gynecological History:

Post-menopausal women were more fatigue than pre-menopausal ones. Females with 4 or more children were at higher risk of fatigue but was not found to be significantly associated see Table I.

➤ **Causal Elements of Fatigue:**

To identify the determinants of fatigue, multivariate logistic regression analysis was applied and the results are present in Table II.

Females of age ranging between 60-74 were found to be two and a half times more fatigue (OR=2.5, CI=0.55-11.35) . Fatigue level in connection with health related variables was significantly associated with physical exercise (OR=2.5, CI= 1.27-5.00, $p < 0.05$). When comparing BMI, risk of fatigue significantly increases among overweight women (OR=3.39, CI= 1.54-7.46, $p < 0.05$). In gynecological history, females with age of menarche greater than 14 were two folds more fatigue (Table II)

Table I : Showing characteristics of participants with or without fatigue.

Variable	Fatigue (n = 76)	No fatigue (n = 44)	Total (n = 120)	P value
SOCIO-DEMOGRAPHIC CHARACTERISTICS.				
Age				0.167
45-59	(55.8)67	42 (35.0)	109 (90.8)	
60-74	(6.7)8	2 (1.7)	10 (8.3)	
>75	(0.8)1	0 (0.0)	1 (0.8)	
Marital status				0.038
Single	2 (1.7)	6 (5.0)	8 (6.7)	
Married	68 (56.7)	36 (30.0)	104 (86.7)	
Widow	6 (5.0)	2 (1.7)	8 (6.7)	
Occupational status				0.718
Employed	40 (33.3)	24 (20.0)	64 (53.3)	
Retired	3 (2.5)	3 (2.5)	6 (5.0)	
Unemployed	33 (27.5)	17 (14.2)	50 (41.7)	
Physical exercise				0.017
No	53 (44.2)	21 (17.5)	74 (61.7)	
Yes	23 (19.2)	23 (19.2)	46 (38.3)	

BMI				0.060
Underweight	3 (2.5)	1 (0.8)	4 (3.3)	
Normal weight	26 (21.7)	27 (22.5)	53 (44.2)	
Overweight	36 (30.0)	11 (9.2)	47 (39.2)	
Obese	11 (9.2)	5 (4.2)	16 (13.3)	
Chronic disease				0.561
Hypertension	47 (39.2)	23 (19.2)	70 (58.3)	
Diabetes	12 (10.0)	8 (6.7)	20 (16.7)	
Heart disease	2 (1.7)	1 (0.8)	3 (2.5)	
Lung disease	1 (0.8)	0 (0.0)	1 (0.8)	
More than one	8 (6.7)	7 (15.9)	15 (12.5)	
None	6 (5.0)	5 (4.2)	11 (9.2)	
Hospitalization				0.900
No	65 (54.2)	38 (31.7)	103 (85.8)	
Yes	11 (9.2)	6 (5.0)	17 (14.2)	
Age of menarche				0.309
<12	5 (4.2)	5 (4.2)	10 (8.3)	
12-14	51 (42.5)	30 (25.0)	81 (67.5)	
>14	20 (16.7)	9 (7.5)	29 (24.2)	
Menopause status				0.831

Pre-menopause	33 (35.8)	20 (16.7)	53 (44.2)	
Post-menopause	43 (27.5)	24 (20.0)	67 (55.8)	
No. of live births				0.255
0	3 (2.5)	7 (5.8)	10 (8.3)	
1	9 (7.5)	2 (1.7)	11 (9.2)	
2	13 (10.8)	9 (7.5)	22 (18.3)	
3	21 (17.5)	10 (8.3)	31 (25.8)	
>4	30 (25.0)	16 (13.3)	46 (38.3)	

Data presented are mean (SD) or n(%); Fatigue defined as Chalder Fatigue Scale score $\geq$ 4; BMI= body

mass index ; p<0.05.

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Table II : Variables related to fatigue with multiple logistic regression analysis

Variable		OR (95% CI)	P value
Age	45-59	Reference value	
	60-74	2.5 (0.55-11.35)	0.2
	≥75	Nil	
Marital Status	Married	Reference value	
	Single	0.52 (0.21-1.33)	0.178
Occupation	Employed	Reference value	
	Retired	0.6 (0.13-2.53)	0.4
	Unemployed	1.16 (0.57-2.34)	0.6
Physical Exercise	Yes	Reference value	
	No	2.5 (1.27-5.00)	0.008

BMI	Normal weight	Reference value	
	Under weight	3.11 (0.35-27.2)	0.3
	Over weight	3.39 (1.54-7.46)	0.002
	Obese	2.2 (0.77-6.70)	0.13
Hospitalization in the last year	No	Reference value	
	Yes	1 (0.40-2.83)	0.88
Age of Menarche	12	Reference value	
	14	1.7 (0.53-5.35)	0.3
	≥14	2.2 (0.60-8.10)	0.2
Menopause Status	Pre-menopause	Reference value	
	Post-menopause	1 (0.55-2.13)	0.8

No of live births	1	Reference value	
	2	0.32 (0.06-1.66)	0.17
	3	0.46 (0.09-2.34)	0.355
	≥4	0.41 (0.08-1.98)	0.27

Fatigue defined as Chalder Fatigue Scale score ≥4 ; OR= odds ratio; CI= confidence interval; Single=
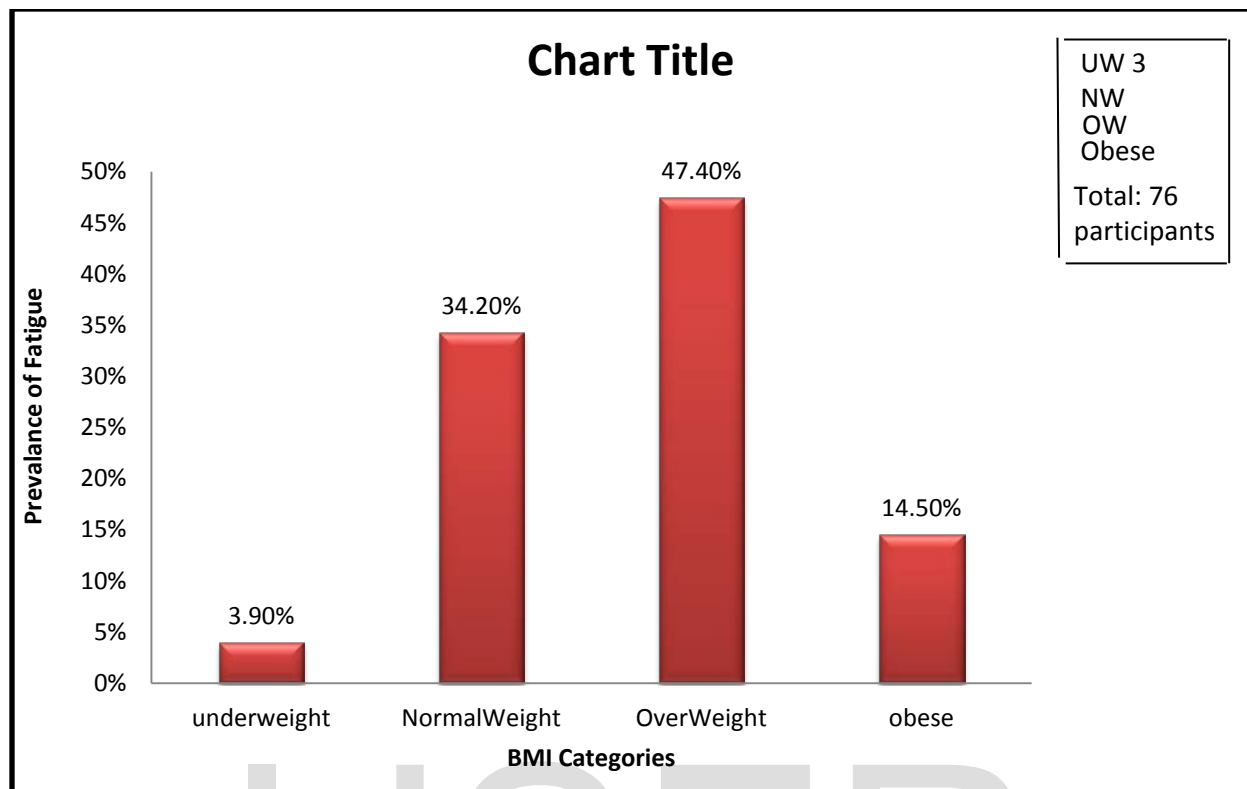
unmarried or widowed; BMI=bady mass index. p<0.05.

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Figure 1: Prevalence of fatigue among different BMI categories.

DISCUSSION

Prevalence and causative factors of fatigue were determined among 45 and elderly females in our study. More than half of the study participants were identified to be fatigue through C.F.S. In relation with previous studies, our study findings suggested that physical exercise, overweight and marital status were significantly associated with fatigue and could be the risk factors among non-fatigue females.

According to a couple of studies, when addressing gender differences, women are found to be more fatigue than men (6) (9). Prevalence of fatigue in our study was 63.3% among 45 and elderly females. This prevalence was much higher than the previous studies held in China with 33.9% (4) and other in Hong Kong with 13.1% (5). The reason of having different prevalence could be the difference of population, sample size, habitat, lifestyle etc.

In our study, although an increasing trend was available between the age of 60-74 but both variables were not associated significantly. Like in a previous study done by David et al. he found no association of fatigue and age (10) (12).

An association between marital status and fatigue was also determined. In our present study, marital status was significantly associated with fatigue. While contrastively studies of Loge et al. (11), Jing et al. (4) and David et al. (13) found no association between marital status and fatigue.

Previously, the researches (1)(14)(15) claimed that physical exercise could be a relieving factor , as it could help reducing fatigue level. Similarly in our present study fatigue and exercise were significantly associated.

According to Jing et al. (4) and Tennant et al. (16) being underweight was a reason to experience higher amount of fatigue as these two variables were significantly associated. Our study findings suggested that being overweight was shown to be a risk factor for fatigue but it was not associated significantly.

Franssen et al. (18) compared fatigue level with chronic diseases and reported that, higher number of chronic diseases causes more fatigue among people. Study findings of Jing et al. (4)(19) confirmed the strong association between chronic diseases and fatigue. Our study didn't show significance between these variables.

Important findings were found when fatigue level was compared with gynecological data. As in menopause cessation of endogenous hormones occur, this could lead to a number of diseases including chronic heart disease, hypertension (20), metabolic syndrome (21), artherosclerotic disease (22), muscle/joint pain and insomnia (23). Our study finding also suggested greater pattern of fatigue among post-menopausal females although they were not significantly associated.

Parikh et al. (24) in her research concluded that number of live births were also said to affect the structure and function of left ventricle notably among those having 5 or more children. Sanghavi et al. reported 4 or more number of children could increase the risk of aorta wall thickness (AWT) and coronary artery calcification (CAC) (25), this decrease quantity of oxygen to muscles. Our study findings reported most of the females who were fatigue had 4 or more number of live births, so they might be at risk of developing CVD.

CONCLUSION:

In our study an elevated rate of prevalence of fatigue among 45 years and older females was identified. The related factors of fatigue were found to be marital status, physical exercise and being overweight. A prospective study is required with larger sample size to determine the causal relationship of fatigue with related factors.

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