EPIDEMIOLOGY AND MODIFIABLE RISK FACTORS OF FIBROMYALGIA AMONG YOUNG AND MIDDLE AGE WOMEN

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Abstract:Widespread pain, exhaustion and irregular sleep patterns are the primary symptoms of the common chronic illness known as Fibromyalgia. The main symptom is chronic generalized pain that lasts for at least three months. Fibromyalgia is a widespread and incapacitating illness.

Objective: To calculate epidemiology and to identify modifiable risk factors of Fibromyalgia among women.

Methodology: Descriptive Cross-sectional study was conducted in Gujrat and Gujranwala among 203 females. In this study, females between the ages of 18 to 49 years were enrolled via non-probability convenient sampling. Participants who met the inclusion and exclusion criteria were selected. Widespread pain Index, Symptom severity scale and self-structured likert scale was used as a diagnostic tool for assessment. At 95% confidence level, Version 20.0 of SPSS software was used for data entry and analysis. The chi-square test was employed to determine the association between Fibromyalgia and modifiable risk variables.

Results: The results of this study indicated that out of 203 participants of age 18 to 49 years, the mean age and standard deviation was 31.10±10.37. The mean BMI (Kg/m^2) and standard deviation was 23.43±3.78. According to Widespread pain index results 107(52.71%) participants were positive and 96(47.29%) participants were negative. According to Symptom severity scale 143(70.44%) participants were positive and 60(29.56%) participants were negative. Prevalence of Fibromyalgia indicates 107(52.71%) participants had Fibromyalgia while 96(47.29%) participants didn't. Stress (p-value=0.017), Illness (p-value=0.003), Obese (p-value<0.001), Depressed (p-value<0.001), Body ache (p-value<0.001), Blood pressure (p-value<0.001), Diabetes (p-value<0.001) were considered as statistically significant with p-value<0.05.

Conclusion: The present study concluded that the epidemiology of Fibromyalgia among women is more. Significant modifiable risk factors were Stress, Illness, Obese, Depressed, Body ache, Blood pressure, Diabetes.

Keywords:*Fibromyalgia, Epidemiology, Modifiable risk factors, Women, Body mass index*

I. INTRODUCTION

In 1990, the American college of Rheumatology set classification standards for fibromyalgia, which included the necessity of numerous tender points and chronic widespread pain. In the tenth revision of the International classification of Disease in 1994, fibromyalgia was identified as a disorder of the Musculoskeletal system and connective tissue.[1] Fibromyalgia is a common and debilitating condition.[2] In the United States, 2% of the general population suffers from Fibromyalgia, with middle-aged women being more susceptible.[3]Widespread pain, exhaustion, and irregular sleep patterns are the primary symptoms of the common chronic illness known as fibromyalgia.[4]

The primary symptom lasts for at least three months and is chronic widespread pain.[5]According to a research, categorization criteria of the American college of Rheumatology, 11 of the 18 painful spots and generalized pain are characteristics of fibromyalgia.[6] Evaluating and accurately assessing chronic widespread pain may be difficult.Worldwide, fibromyalgia is a common illness that affects all demographics. Most studies have found that between 2 and 4% of patients had symptoms that are consistent with diagnostic criteria.[6] A Widespread pain index of

7 or higher, a Symptom severity scale of 5 or higher, and the presence of symptoms for at least three months are all required for a positive diagnosis.[7]

According to a study, third most common among musculoskeletal conditions, fibromyalgia is more common as people get older. Numerous factors including genetic predisposition, personal experiences, emotional-cognitive components, the mind-body link, and the biopsychological ability to handle stress all play a unique role in the development of fibromyalgia.[8] Non-modifiable risk factors include genetics, female sex, and the presence of other painful diseases.[9] The symptoms of fibromyalgia, which include exhaustion, memory problems, irregular sleep patterns, mood swings, and pain in the central nervous system that is amplified, might be interpreted as a single diagnosis or as a group of symptoms. Today, fibromyalgia can be successfully treated.[10]

A study was carried in 2016. The goal of the study was to determine the prevalence of fibromyalgia in women between the ages of 20 and 49. The result was that before the current population survey, 34 out of 40 women with Fibromyalgia (85.0%) had visited a doctor due to widespread pain or stiffness. 14 cases (41.2%) of the 34 women had been diagnosed with fibromyalgia. The conclusion is that one of the main contributors to pain in the locomotor system is fibromyalgia.[1] A study conducted in 2016 to determine the prevalence of fibromyalgia among people in Spain. The total sample included 4916 people under the age of 20. 24 out of 602 participants (12.25%) with positive Fibromyalgia screening results were missing (3.99 percent). There were 141 Fibromyalgia instances reported in total. 2.45 percent was the estimated prevalence rate. The factor most closely associated with FM was female sex. Peak prevalence was between the ages of 60 and 69. Obese people had FM 68 percent more frequently.[11]

Two quick assessment scales: the Widespread pain Index, which rates the number of pain locations from a list of 19, and the Symptom Severity Score, this evaluates the level of exhaustion, sleep disruptions, cognitive symptoms, and somatic symptom burden and ranges from 0 to 12.[12]Fibromyalgia affects all populations globally and between 2% and 4% of people in the general population experience its symptoms.[12]A risk factor for the onset of chronic widespread pain is inadequate sleep, according to epidemiological studies.[13]

The most obvious or problematic symptoms of Fibromyalgia should be controlled during treatment, along with maintaining or improving function and quality of life. Every time a patient comes in for treatment, the value of good sleep hygiene, active self-management, and consistent exercise should be emphasized.[8]Physical treatment appears to lessen the effects of disease. Therefore, the most successful approach for treating fibromyalgia is a multidisciplinary one that combines these therapies into a well-balanced plan.[14]

This research broader my aspects by using comprehensive approaches. We should give awareness to our community about modifiable risk factors, so that they might be able to show concern regarding the disorder.The goal of this study is to calculate the epidemiology of fibromyalgia in young and middle-aged women and to identify its associated modifiable risk factors.

II. METHODOLOGY

Data was collected from Gujrat and Gujranwala among 203 females. Subjects who meet the inclusion and exclusion criteria were selected. Females aged between 18 to 49 years were included in this study by using non-probability convenient sampling technique. Inclusion criteria include young women (18 to 24 year), middle aged women (25 to 49 years). Exclusion Criteria include person who reported with metabolic disorders (Gaucher disease, cystic fibrosis, krabbe disease), Diagnosed with neurological disorders (Alzheimer's illness, Bell's palsy, brain tumour, acute spinal cord damage), Drug abuse (Nicotine use, Sedative use) and Patient diagnosed with cancer (of any type) [15] The outcome measures of my research were Widespread pain index, Symptom severity scale and self-structured likert scale. Necessary demographic information such as name, age, height, body mass index and weight was noted in the form. Height was measured through measuring tape and weight through weight machine. Widespread pain index scale was used to measure the painful body regions. The total number of body areas of WPI score can range from 0 to 19. The results of both scales were significantly connected with measures of clinical pain, exhaustion, sleeplessness, depression, and anxiety, but they had no bearing on central pain sensitization or pain threshold and tolerance.[15]The total severity of the three symptoms (fatigue, unrefreshed walking, and cognitive problems) plus the degree of severity of somatic symptoms made up the SS scale score. For Fibromyalgia, the Widespread pain index score must be 7 or higher and the Symptom severity scale score must be 5 or above.[15] A self-structured likert scale was used to identify modifiable risk factors among females. This self-structured likert scale had 11 modifiable risk factors (trouble falling in sleep, proper meal, stress, illness,

obese, depressed, immobility, body ache, blood pressure, diabetes and comorbidity). Then evaluate it through questionnaire. Data was entered and analyzed using SPSS software version 24. For descriptive analysis, mean and standard deviation was calculated for quantitative variables whereas frequencies and percentages were calculated for qualitative variables. For inferential statistics, to find significance chi test was applied. All results were calculated at 95% confidence interval and p-value<0.05 was considered as significant value.

III. RESULTS

Following results were obtained from 203 participants after the analysis of data. Out of 203 participants 93(45.8%) were between the age of 18-25, 33(16.3%) were between the age of 26-33, 31(15.3%) were between the age of 34-41 and 46(22.7%) were between the age of 42-49. The mean age and standard deviation was 31.10±10.37 (Table 1). Results indicate that 22(10.8%) participants were underweight, 116(57.1%) participants were normal, 57(28.1%) participants were overweight and 8(3.9%) participants were obese. The Body mass Index mean and standard deviation was 23.43±3.78 (Table 1). According to Widespread pain index results 107(52.71%) participants were positive and 96(47.29%) participants were negative. The mean and standard deviation of Widespread pain index was 5.59±3.62. According to Symptom severity scale 143(70.44%) participants were positive and 60(29.56%) participants were negative. The mean and standard deviation of Symptom severity scalewas 5.39±2.04. Prevalence of Fibromyalgia indicates 107(52.71%) participants had Fibromyalgia while 96(47.29%) participants didn't (Table 2).Chi square analysis revealed that Stress is highly associated with Fibromyalgia and is highly significant (χ^2=5.702, p-value=0.017).Association among Illness and Fibromyalgia was analyzed which showed that they were highly associated and showed significant results (χ^2=8.609, p-value=0.003).According to chi square analysis Obese participants were highly associated with Fibromyalgia and showed significant results (χ^2=18.631, p-value<0.001).Depressed participants and Fibromyalgia were highly correlated to each other as per analysis (χ^2=12.27, p-value<0.001).Body ache and Fibromyalgia were also associated and showed significant results when analysis was done (χ^2=37.543, p-value<0.001).According to the analysis of this study, Blood Pressure and Fibromyalgia were highly associated with each other (χ^2=37.599, p-value<0.001).Analysis revealed that Diabetes were significantly associated with Fibromyalgia (χ^2=13.802, p-value<0.001) (Table 3). To quantify Modifiable risk factors odds ratio were calculated.

Tables:

Variables	Mean ± Std. Deviation
Age of participants in years	31.10±10.37
Body mass index score of participants(Kg/m^2)	23.43±3.78
Widespread pain index score	5.59±3.62
Symptom severity scale score	5.39±2.04

Table 1: Descriptive analysis of variables

Table 1 shows age of participants Mean ± Std. Deviation was 31.10±10.37, Body mass index Mean ± Std. Deviation was 23.43±3.78, Widespread pain index score Mean ± Std. Deviation was 5.59±3.62, Symptom severity scale Mean ± Std. Deviation was 5.39±2.04.

Fibromyalgia	Responses	n(%)
Fibromyalgia through Widespread pain index	Yes(7 and above)	107(52.70)
	No(<7)	96(47.30)
Fibromyalgia through Symptom severity scale	Yes(5 and above)	143(70.40)
	No(<5)	60(29.60)
Epidemiology of Fibromyalgia	Yes(positive)	107(52.70)
	No(negative)	96(47.30)
Total		203(100)

Table 2: Epidemiology of Fibromyalgia

Table 2 shows that according to the Widespread pain index 107(52.7%) participants had positive Fibromyalgia score while 96(47.3%) participants did not. According to Symptom severity scale 143(70.4%) participants had positive Fibromyalgia score while 60(29.6%) participants did not. According

to epidemiology 107(52.7%) participants had Fibromyalgia while 96(47.3%) had no Fibromyalgia.

Modifiable risk factors		Fibromyalgia		Total	Chi-square	P-value
		Yes (Positive)	No (Negative)			
Do you trouble falling in sleep?	Yes	47(43.9%)	32(33.3%)	79(38.9%)	2.388	0.122

Table 3: Association of Fibromyalgia with modifiable risk factors

	No	60(56.1%)	64(66.7%)	124(61.1%)		
Do you take proper meal?	No	27(25.2%)	27(28.1%)	54(26.6%)	0.217	0.642
	Yes	80(74.8%)	69(71.9%)	149(73.4%)		
Do you have any kind of stress?	Yes	39(36.4%)	51(53.1%)	90(44.3%)	5.702	0.017*
	No	68(63.6%)	45(46.9%)	113(55.7%)		
Do you have any illness?	Yes	40(37.4%)	18(18.8%)	58(28.6%)	8.609	0.003*
	No	67(62.6%)	78(81.2%)	145(71.4%)		
Are you obese?	Yes	48(44.9%)	16(16.7%)	64(31.5%)	18.631	<0.001*
	No	59(55.1%)	80(83.3%)	139(68.5%)		
Do you feel depressed?	Yes	28(26.2%)	48(50.0%)	76(37.4%)	12.270	<0.001*
	No	79(73.8%)	48(50.0%)	127(62.6%)		
Any immobility	Yes	2(1.9%)	2(2.1%)	4(2.0%)	0.012	0.913
	No	105(98.1%)	94(97.9%)	199(98.0%)		
Body ache	Yes	101(94.4%)	56(58.3%)	157(77.3%)	37.543	<0.001*
	No	6(5.6%)	40(41.7%)	46(22.7%)		
Blood pressure	Yes	54(50.5%)	10(10.4%)	64(31.5%)	37.599	<0.001*
	No	53(49.5%)	86(89.6%)	139(68.5%)		
Diabetes	Yes	17(15.9%)	1(1.0%)	18(8.9%)	13.802	<0.001*
	No	90(84.1%)	95(99.0%)	185(91.1%)		
Any comorbidity	Yes	3(2.8%)	0(0.0%)	3(1.5%)	2.732	0.098
	No	104(97.2%)	96(100.0%)	200(98.5%)		
Total		107(100%)	96(100%)	203(100%)		

Table 3 shows that modifiable risk factors such as Stress (χ^2=5.702, p-value=0.017), Illness (χ^2=8.609, p-value=0.003), Obese (χ^2=18.631, p-value<0.001), Depressed (χ^2=12.27, p-value<0.001), Body ache (χ^2=37.543, p-value<0.001), Blood pressure (χ^2=37.599, p-value<0.001), Diabetes (χ^2=13.802, p-value<0.001) were considered as statistically significant with p-value<0.05. Trouble falling in sleep (χ^2=2.388, p-value=0.122), Meal (χ^2=0.217, p-value=0.642), Immobility (χ^2=0.012, p-value=0.913), Comorbidity (χ^2=2.732, p-value=0.098) were not associated with Fibromyalgia.

IV. DISCUSSION

Fibromyalgia is a frequent disease that that affects women. As much as 2% to 8% of people have fibromyalgia, It is characterized by generalized discomfort, typically accompanied by fatigue, memory problems, and sleep disturbances.[10]Pain processing disorders include fibromyalgia. Evidence suggests that the central amplification of pain signals is caused by aberrant functioning of the ascending and descending pain pathways. Despite this increasing knowledge and understanding, an estimated 75% of FM individuals remains untreated.[16]This research was conducted to find the epidemiology and modifiable risk factors of Fibromyalgia so that it would be helpful in formulating rehabilitation protocols for those females who have Fibromyalgia. Females between the ages of 18 and 49 were the focus of the current population study in Gujrat and Gujranwala. Overall, 52.71% of the participating women experienced joint, muscular, back, or overall pain for periods of three months or more during the previous year. This astronomically high number would suggest that the poll was quite sensitive in terms of picking up on people who had these issues.A study was done in 2016, the aim of the study was to determine the prevalence of fibromyalgia in women between the ages of 20 and 49. The result was that before the current population survey, 34 out of 40 women with

FM (85.0%) had visited a doctor due to widespread pain or stiffness. 14 cases (41.2%) of the 34 women had been diagnosed with fibromyalgia. Theconclusion is that one of the main contributors to pain in the locomotor system is fibromyalgia. This indicates that the ratio of Fibromyalgia is increasing by time. The findings of this research are in accordance with our results.[1]A research was carried in 2013, the purpose the study was to check the worldwide epidemiology of Fibromyalgia. The study found that 2.7% of 26 studies conducted worldwide had FM. FM is more common in women, people over 50, those with low socioeconomic position, people who don't have much education, people who live in rural areas, and potentially obese women. So, the researcher's findings are in compliance with our results.[17]This study's objective was to determine the dietary preferences of people with fibromyalgia by, for the first time, contrasting them with healthy controls and people with rheumatoid arthritis. Data from 287 FM, 1,983 healthy controls, and 1,942 rheumatoid arthritis patients were evaluated after quality assurance. In contrast to Healthy controls, we discovered that FM significantly affected diet. This cross-sectional study demonstrates the link between FM and a large deviation from the recommended dietary patterns.[18]This study was conducted in 2021. This study objective was to ascertain the effects of anxiety, PSTD, sleeplessness and Fibromyalgia in female migrants. We sought out 288 refugees who had previously been diagnosed with Fibromyalgia. The finding indicated that moderate to severe Fibromyalgia impact affected 73.62% of the subjects. Female refugees should receive special attention from mental health nurses, especially if they are older, more anxious, or have PSTD. So, this study indicates Fibromyalgia is highly associated with stress and age.[19]

In 2017, in a study the association between depression severity and other Fibromyalgia symptoms such as pain, tiredness and sleep problems as well as the disease's severity, activity level, functional ability and quality of life was investigated. 62% of those surveyed said they had depression overall. Patients with depression had worse quality of life, higher levels of pain, tiredness, sleep problems and symptom severity as well as lower levels of lower limb strength and activity time (p 0.05). Depressed women with Fibromyalgia experienced more severe symptoms and reported lower levels of physical fitness and quality of life than their non-depressed counterparts.[20]

Recommendations: In this study data was taken from Gujrat and Gujranwala. But it is advised that additional research on the epidemiology of Fibromyalgia be done in other Pakistani cities. For more accurate results, a high sample size should be used. In the future, probability sampling should be performed instead of non-probability sampling for better selection.

V. CONCLUSION

The study concluded that current research revealed that the epidemiology of Fibromyalgia among women is high. Significant modifiable risk factors were stress, illness, obese, depressed, body ache, blood pressure and diabetes. There is no significant relation between trouble falling in sleep, meal, immobility, comorbidity with Fibromyalgia.

Conflict of Interest

There was no conflict of interest.

Financial Statement

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Data availability

Data will be provided on the demand by corresponding author.

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