

Musculoskeletal Pain and its relation with obesity

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Abstract : Musculoskeletal pain (MSP) is a well-known burden of disease and disability in all age groups and both sexes. Material & methods – 353 females from Barabanki in UP were studied to describe the risk factor and prevalence of MSP. Any history of musculoskeletal pain was recorded. Results – the overall prevalence of musculoskeletal pain in Barabanki district was 45.33% (88.46% in urban and 37.87% in rural). Musculoskeletal pain was absent in 64.67% of study subjects. The risk of MSP is 5 times higher in BMI ≥ 25 than in women with BMI < 25 . Conclusions – There is significant association between high BMI, body fat % and visceral fat% with musculoskeletal pain.

Key words - musculoskeletal pain, prevalence.

I. INTRODUCTION

Musculoskeletal conditions affect more than 1.7 billion people worldwide and have the 4th greatest impact on the overall health of the world population, considering both death and disability. This burden has increased by 45% during the past 20 years and will continue to escalate unless action is taken [1]. These cause considerable functional limitations in the adult population of most welfare states as compared to any other group of disorders. They are also a major cause of years lived with disability (YLDs) in all continents and economies [2].

The concept that body size, shape and composition influence susceptibility and resistance to disease is truly ancient [3]. Generally, women have more complex and stressful aging process as compared to men, due to hormonal changes that occur during menopausal transition [4]. The onset of this physiological development not only marks the end of female reproductive function and makes them more vulnerable to a new set of health problems like cardiovascular diseases, osteoporosis and so on [5].

II. MATERIAL AND METHODS

A cross-sectional study was conducted in the population living in eight villages of Barabanki district in UP from July to December 2015 among housewives in the age group 26-65 years. The sample size was calculated to be 330 considering an expected prevalence rate of 31.3% (musculoskeletal pain among women), [10] with absolute precision of 5%. Since ninety percent of population of Barabanki is rural [11], by Population Proportion Sampling, 297 (~301) women from rural area and 33(~52) from urban area were selected as study participants.

Personal and social details of each subject were collected through a pretested questionnaire.

Any musculoskeletal pain (pain arising from any part of body due to involvement of muscles, bone, joints, ligaments or nerves) in last 7 days was noted.

All data was compiled on MS Excel with subsequent clean up and proper checks. Chi-square, Student's t test were used to test the associations among different study variables.

III. RESULTS

The mean age of rural women was 41.69 ± 11.86 and urban women was 35.10 ± 7.66 . Majority of women were of Hindu religion (96.67% in rural and 92.6% in urban) and OBC caste (85.22% in rural and 79.17% in urban). More than half individuals (61.8%) in rural area lived in joint families whereas 82.69% in urban area belonged to nuclear families.

Most of the females were married (94% in rural and 84.62% in urban) and only 2.7% in rural area and 3.84% urban area

were widows. Over 40% females belonged to lower and lower middle class. 51.3% of the females in rural areas were illiterate and 55.77% in urban area had education upto intermediate. Eighty nine percent of females in rural area were housewives, 5% were farmers and 2% were government employee. Most common occupation in urban area was private service (34.62%) followed by government employee (28.85%) and 21.15% were housewives.

The prevalence of high body fat% was maximum (74%) out of all body composition parameters. High BMI (overweight & obese) was found in 24% and high visceral fat% among 24.3%. More than 50% study subjects had normal BMI and VF%.

Table 1 shows the risk of women with high BMI (>24.9) of having high body fat is 9 times more than those with BMI <25 (OR=9.106, C.I.=3.923-21.096) $p<0.05$. Similarly there is 12 times higher risk of having high visceral fat in women with high BMI (OR=11.840, C.I.=6.599-21.238) $p<0.05$.

Table 1: Association between BMI and Body fat/ Visceral fat

BMI	Body fat%		Visceral fat	
	Low/Normal n=77	High n=219	Low/Normal n=224	High n=72
<25	76	152	206	22
25-29.9	1	50	18	33
>30	0	17	0	17

Table 2 shows the overall prevalence of musculoskeletal pain in Barabanki district was 45.33% (88.46% in urban and 37.87% in rural). Musculoskeletal pain was absent in 64.67% of study subjects.

Table 2: Prevalence of MSP

MSP	Rural (n=301)	Urban (n=52)	Total (n=353)
MSP present	114 (37.87%)	46 (88.46%)	160 (45.33%)
MSP absent	187 (62.13%)	6 (11.54%)	194 (64.67%)

There is significant association between high BMI, body fat % and visceral fat% with musculoskeletal pain. The risk of MSP is 1.5 times more in body fat% ≥ 30 than in women with body fat% < 30. Similarly, the risk of MSP is 2 times more in visceral fat% $\geq 10\%$ than in women with visceral fat% < 10%.

Table 3 shows that the highest prevalence of musculoskeletal pain among women with BMI>24.9 was found in back and it was more in urban than rural population. The rural-urban differences in MSP among BMI>24.9 was significant in back and neck.

Table 3: Overweight and Obesity (BMI > 24.9) and MSP in the study subjects

Musculoskeletal pain	Overweight & Obese (n=100)		χ^2	p
	Rural (n=66)	Urban (n=34)		
No MSP	26 (39.39%)	0 (0.0%)	10.44	<0.05
MSP in one or more site*	40 (60.60%)	34 (100%)	10.89	<0.05
Backache	24 (36.36%)	29 (85.29%)	19.65	<0.05
Pain in shoulder + upper limb	6 (9.09%)	2 (58.82%)	0.029	0.86
Pain in lower limbs	31 (46.96%)	18 (52.94%)	0.126	0.72

Neck	1 (1.52%)	6 (17.65%)	6.66	<0.05
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*Either the neck, hand, shoulder, upper back, lower back, thigh, knee or ankle.

IV. DISCUSSION

Being overweight or obese puts extra weight on human muscles and thus increases the risk of MSP. [6, 7] A recent study showed that overweight and obesity increased the risk of widespread chronic musculoskeletal pain during 11-year follow-up. [8]

Whether excess body mass has a similar effect on risk of localized chronic pain in the low back or neck/shoulders is unknown as per another study. [9] Several studies have reported that the higher prevalence of low back pain in menopausal middle aged women. [10-12] Increase in BMI, was observed among housewives with MSP as compared to no MSP group. This is similar to a study done in National Capital Region in India. [3] Musculoskeletal pain is also one of the most common reasons for seeking medical advice in Western societies. [13, 14]

Recent prevalence data from the Framingham Study reported that 29% of women reported foot pain on most days of the month, with prevalence of pain at specific foot locations ranging from 7% to 13%. [15] This pain in foot/ankle may be attributed to the use of inappropriate footwear. Nearly 60 per cent of the people in India have significant back pain at some time or the other during their lives. [16]

V. CONCLUSION

More than 40% of house wives from rural areas suffer from MSP. Corroboration of our findings by larger studies could lead to strategies for prevention and control of MSP in this group.

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