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### Prevalence of musculoskeletal symptoms in obesity

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#### ABSTRACT

##### Background and aim

Overweight and obesity are increasing in India. Obesity is nowadays the most common metabolic disease in the world. According to WHO, epidemic size posing a key health problem in developed and developing countries. In epidemiological studies, it is clear that more body weight that affects all diseases of the musculoskeletal system, such as osteoarthritis, metabolic diseases, such as osteoporosis, gout, connective tissue diseases – rheumatoid arthritis, systemic lupus erythematosus, rare diseases like idiopathic hyperostosis, or rarely diagnosed as fibromyalgia. This study was designed to identify the prevalence of musculoskeletal symptoms in individuals with obesity.

##### Methodology

Cross-sectional study with simple random sampling. Both the genders male and female involved with sample size 100. Demographic information and clinical evaluation was obtained from questionnaire. Results were obtained on the basis of graphs and analysis of the data was done.

##### Results and conclusion

Total, 100 subjects were assessed, of which 56 were female and 44 were male. Mean age of the subjects was 38 years and mean body-mass index was 33.88 kg/m<sup>2</sup>. All subjects had musculoskeletal pain in at least one anatomical region. Anatomical regions by pain affected were the knees, lower back and ankles and feet, wrist/hands/fingers. In conclusion, showed that there is a high prevalence of musculoskeletal in obese people.

**Keywords:** Obesity, Musculoskeletal pain, Epidemiology

#### INTRODUCTION

World Health Organization (WHO), obesity is one of the most common and among the most neglected by the individuals in countries like India [1]. Obesity has become important health problem worldwide [2].

World Health Statistics Report 2012, globally one in six adults are obese and around 2.8 million people die each year due to overweight or obesity [3]. Obesity has become a major health challenge and the incidence of obesity also increased in recent years [4].

Person with increased body-mass index (BMI) is an important risk factor for causes of mortality, including cardiovascular disease, types of cancer,

hepatic and kidney diseases, and others [5]. A higher prevalence of musculoskeletal symptoms affecting mainly the lower limbs has been reported in obese people [6, 7]. There is a significant positive association between musculoskeletal disorders and the grade of obesity [7]. Some of these symptoms manifest as joint discomfort mainly caused by excess weight, which can overload the musculoskeletal structures responsible for stabilizing and moving the body [8].

Obesity has been associated with significant impairment in mobility [9] also several musculoskeletal disorders, which can lead to disability and poor quality of life [7, 8] and result in high direct and indirect healthcare economic costs [10, 11].

The purpose of this study was to identify the major musculoskeletal symptoms of individuals with obesity grades I, II and III.

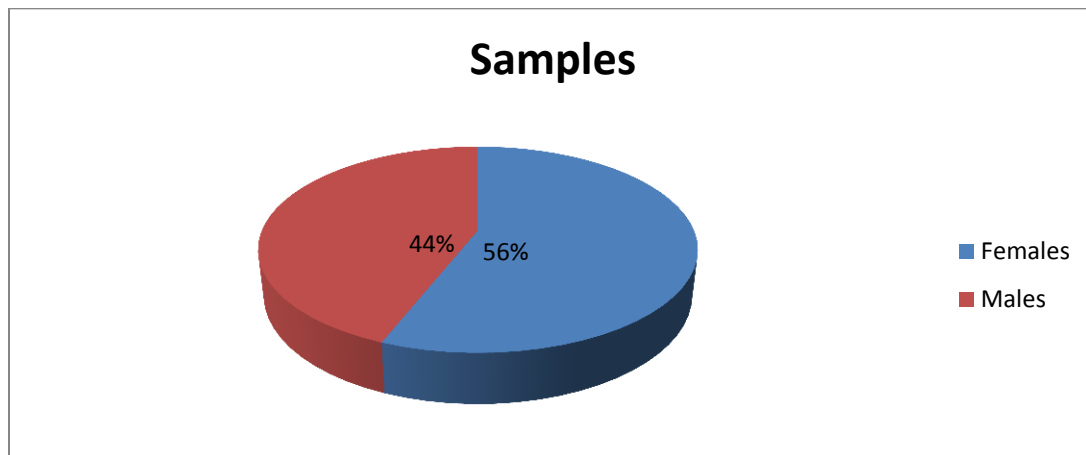
## MATERIALS AND METHODS

This was a cross-sectional study done with simple random sampling. The sample size was 100 and was done in subjects with obesity grades I, II and III in Talegaon Dabhade, Pune. The study population consisted of all patients aged over 18 years (n=100). Inclusive of both male and female.

All details and information were given to subjects. Written consent was taken from subjects for their participation in the study. During the physical therapy consultation of the patients were collected general data, such as age, gender, marital status, education, occupation and lifestyle habits. Patients were clinically assessed for BMI, BMR, Body fat, girth measurement, muscle endurance, skin fold measurement and flexibility assessment. They were screened on interview based questionnaire which was pre validated by 7 subject experts. Completion is aided by a body map to indicate 9 symptoms sites neck, shoulder, elbow, wrist/hands, upper back, low back, hips/thighs, knees and ankles/feet.

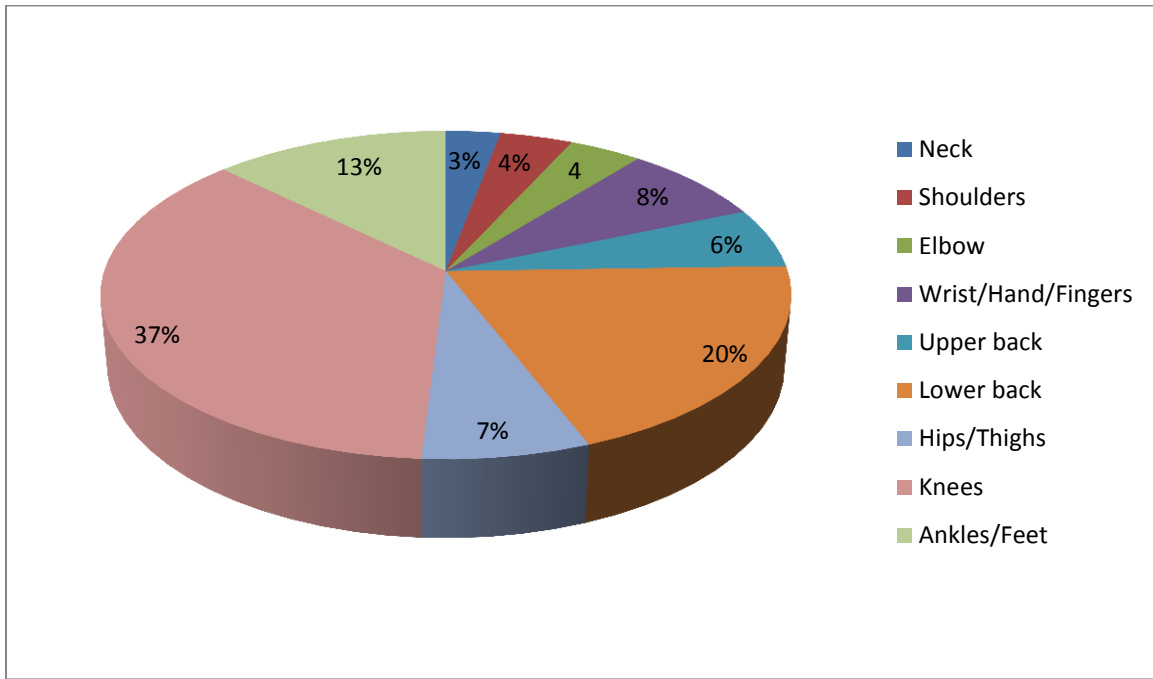
## RESULTS

We evaluated 100 obese subjects (grades I, II and III), out of which 56 were female and 44 were male. The average age of the patients was 38 years and age was from 25 to 65 years. The subject's mean BMI was 33.88 kg/m<sup>2</sup> and its range was from 26.29 to 41.46 kg/m<sup>2</sup>. Prevalence of musculoskeletal symptoms : 100% of subjects reported pain in at least one of the anatomical region.



Graph 1: Demographic data

The above graph shows 56 % females and 44% males.



**Graph 2: Prevalence of musculoskeletal symptoms in individuals with obesity**

The above graph shows prevalence of musculoskeletal symptoms in anatomical regions as neck 3%, shoulders 4%, elbows 4%,

wrist/hand/fingers 8%, upper back 6%, lower back 18%, hips/thighs 7%, knees 37% and ankles/feet 13%.

**Prevalence of musculoskeletal symptoms by anatomic region is presented in Table 1**

Sr. no.	Anatomical regions	Grades I,II,III obesity (n=100)	Percentage %
1	Neck	3	3
2	Shoulders	4	4
3	Elbow	4	4
4	Wrist/hands/ fingers	8	8
5	Upper back	6	6
6	Low back	18	18
7	Hips	7	7
8	Knees	37	37
9	Ankles/feet	13	13

The results showed that all individuals with obesity of grades I,II and III had musculoskeletal symptoms, and all subjects reported pain in at least one anatomical region.

## DISCUSSION

The results showed that subjects with obesity grades I, II and III had pain in at least one of the anatomical region. A prevalence study done by

Hooper in 2007 showed that obese individuals were assessed during preoperative bariatric surgery had musculoskeletal problems in one anatomical region of the body [12].

In present study, the most affected anatomical regions were knees, lower back, ankle/feet and wrist/hands/fingers. Larsson's in their study showed that women who are obese presents with more musculoskeletal pain in lower back, knees and feet [13].

In many literatures it has been shown that there is a prevalence of musculoskeletal symptoms in knees in obese people [14]. Weight gain is associated with adverse effects on the knees such as pain, stiffness and functional changes.<sup>[15]</sup> Additionally, it has reported that BMI > 30 kg/m<sup>2</sup> is an important risk factor for the incidence of knee osteoarthritis [16].

In our study, back pain was the second most prevalent complaint with 18% . A meta-analysis published in 2010 showed that obesity increases the risk of lower back pain and is also strongly associated with increased need for health care for the treatment of acute and chronic lower back pain [17]. The association between obesity and lower back pain has also been shown in other studies [14].

Although only a few publications have related obesity to the prevalence of pain in wrist/hand/fingers, a cohort study conducted with 1,675 individuals showed that obesity was a significant independent predictor for the incidence of hand osteoarthritis [15]. While the presence of osteoarthritis was not assessed in our study, this finding could be related to the high prevalence of pain in this region found in our results. In addition,

obesity is considered an important risk factor for carpal tunnel syndrome [18].

Limitation of the study is that the causes of the musculoskeletal symptoms were not investigated by clinical and radiological evaluation. Another limitation is that the study was conducted in a single institution.

## CONCLUSION

In conclusion, individuals with obesity grades I, II and III showed high prevalence of musculoskeletal symptoms.

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