

depression: Depressed Affect, e.g. “Felt sad”; Positive Affect, e.g. “Felt hopeful about the future”; Somatic, e.g. “Felt that everything I did was an effort”; and Interpersonal, e.g. “Felt that people disliked me”). Models were then re-specified to improve fit and a final factor structure was selected for each measure and included in a combined CFA model that allowed the factors to co-vary.

**Results:** Participants were of mean age 76.5 years (range: 64–100); 76.1% were female. For the WOMAC pain subscale, a model that separated the items “At night in bed” and “Sitting or lying” into its own factor had an equivalent fit to a one factor model with correlated item residuals. For the CES-D, dropping the Interpersonal items to give a 3-factor model provided the best fit. A CFA model that incorporated five factors (Fatigue, Pain, Depressed Affect, Positive Affect and Somatic) suggested overlap between the Pain and Somatic scales. The Pain items “Sitting or lying” and “At night in bed” loaded more strongly on Somatic than on Pain. In the final series of CFA models, a new latent factor, “Disturbed Rest”, was included consisting of the Pain items “At night in bed”, “Sitting or lying” and the Somatic item “Sleep was restless”; the 3 remaining WOMAC pain items comprised a “Pain on Activity” factor. These new factors did not overlap with each other or the other factors and were only moderately correlated ( $r = 0.49$ ). Disturbed Rest was more highly correlated with Depressed affect than Pain on Activity ( $r = 0.45$  vs.  $r = 0.28$ ) and correlated less with Fatigue ( $r = 0.45$  vs.  $r = 0.58$ ).

**Conclusion:** Our findings suggest that the WOMAC pain subscale captures two distinct constructs, pain at rest and pain on activity, and that these two constructs relate differently to depression and fatigue. Pain at rest appears to overlap with the Somatic subscale of the CES-D. Our findings suggest that fatigue, pain and depression in OA may be quantified separately if depression assessment is limited to the Depressed affect subscale of the CES-D.

### 391 RELATIONSHIP BETWEEN KNEE PAIN AND FAT AND MUSCLE MASS INVESTIGATION BY SEX AND LEVEL OF KNEE DEFORMITY IN GENERAL COMMUNITY RESIDENTS

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**Purpose:** Although the relation of pain and obesity in knee osteoarthritis is well known, few detailed investigations, including body composition based on Dual Energy X-ray absorptiometry (DXA), have been studied. To elucidate the relationship between knee joint pain and fat and muscle mass, we conducted an investigation with a large-scale cohort of community-dwelling middle-aged and elderly people.

**Methods:** The subjects were 2,337 men and women (mean age  $60.7 \pm 12.6$  years), 4,750 knees in the Fifth Wave of the National Institute for Longevity Sciences – Longitudinal Study of Aging (NILS-LSA). The subjects were asked about current knee pain on a questionnaire. Knee deformity was then separated into the 5 Kellgren-Lawrence grades based on frontal weight-bearing radiographs of the left and right knees, and divided into three groups: 0-I was no deformity, II was mild deformity, and III-IV was severe deformity. Body mass index (BMI) was also measured, and leg fat and muscle mass were gauged by DXA. Then, using the results for BMI and leg fat and muscle mass, leg fat percentage (leg fat mass/body weight  $\times 100$ ), leg muscle percentage (leg muscle mass/body weight  $\times 100$ ), and the ratio of leg fat mass to muscle mass were calculated. Differences in each indicator depending on the presence or absence of current knee pain were investigated for right and left together in men and women with each level of deformation. Statistical analysis was done using a general linear model, with adjustments for age.

**Results:** BMI was significantly larger in the group with knee pain in knees with no deformity in women, and in knees with severe deformity in men (each  $p < 0.05$ ). Leg fat percentage was significantly larger in women with in the group with pain, regardless of the severity of deformity (all  $p < 0.01$ ), while in men it was significantly larger only for those with severe deformity ( $p < 0.05$ ). Leg muscle percentage was significantly smaller only in people with pain in the no-deformity and severe deformity groups among women ( $p < 0.01$ ,  $p < 0.05$ ), while in men no significant differences were observed between groups with and without pain, regardless of the deformity level. In women the leg muscle mass to fat mass ratio was significantly smaller only in those

with pain, regardless of the level of deformity, while in men this was true in those with mild and severe deformity (each  $p < 0.05$ ).

**Conclusion:** This investigation of the relationship between current knee joint pain and fat and muscle mass showed trends for individuals with pain to have higher proportions of leg fat and smaller proportions of muscle, and these trends were more apparent in women.

### 392 PREVALENCE OF KNEE OSTEOARTHRITIS: MATSUDAI KNEE OSTEOARTHRITIS SURVEY 2013, NIIGATA, JAPAN

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**Background:** Knee osteoarthritis (knee OA) is multifactorial disease. To investigate the relationship between knee OA and various factors, we've conducted epidemiological survey for knee OA at the Matsudai district in Niigata prefecture since 1979. We've done interviews, body measurements and examination by the orthopedic surgeons. Standing AP X-ray of both knees had been taken. We've conducted a survey every three years recently, and additionally performed gait analysis, measurements of muscle strength and calcaneal bone density. This time, 7th survey was held in July 2013.

**Purpose:** To report an overview of the latest survey and compare the prevalence of radiographic knee OA with 3rd survey in 1993.

**Methods:** Participants were 722 inhabitants (408 female and 314 male, average age:  $67.3 \pm 13.1$  and  $69.1 \pm 12.6$  years old) (Fig1). They were residents of the district, and all of them were capable of self-walking. After excluding those who have artificial joints, the subjects were 713 inhabitants (400 female and 313 male). The AP X-ray was evaluated according to the Kellgren-Lawrence (K-L) classification and radiographic knee OA was defined as K-L grade of 2 or higher. The prevalence of radiographic knee OA was computed for groups of participants categorized into ten-year age increments. The results of each group were compared using the chi-square test. A P-value of less than 0.001 was considered significant.

**Results:** The prevalence of radiographic knee OA in the 800 knees of the female and the 626 knees of the male is shown in Table 1. While the prevalence increased with age in both female and male, the prevalence of female was significantly higher than that of male over sixties. In the 3rd survey, the prevalence of female and male were previously reported as 27.7% and 10.9% in their sixties, and 43.9% and 16.8% in their seventies. Comparing with 3rd study, the prevalence of radiographic knee OA in this study were increased in sixties and seventies.

**Conclusions:** This is a survey for the knee OA long-lasting in one area of Japan. Prevalence of radiographic knee OA increases with age, and that of female is especially high as shown in previous reports. And it is increasing in both female and male comparing with 3rd survey in 1993. Changes of resident's lifestyle could be considered as a cause of the increase. We plan to continue the study of the various examination such as gait analysis, measurements of muscle strength and bone density carried out this time.

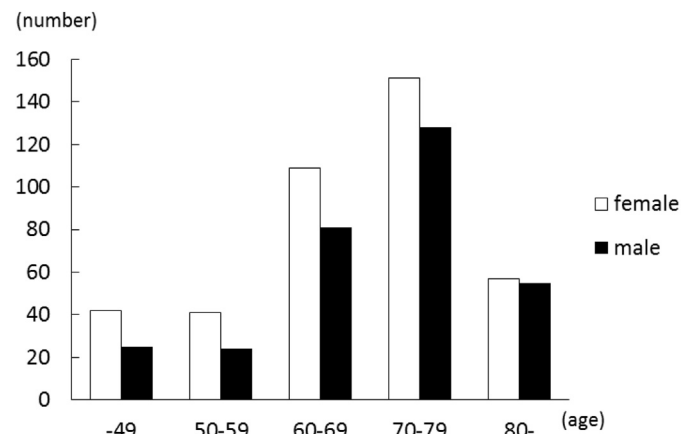


Fig1: Numbers of participants in Matsudai Knee OA Survey 2013