P224
IDENTIFICATION OF EARLY KNEE OSTEOARTHRITIS: RESULTS FROM THE DEVELOPMENT OF A MODEL FOR THE DIAGNOSIS OF EARLY KNEE OSTEOARTHRITIS (MODEKO) STUDY

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Purpose: To develop a model for the identification of early symptomatic knee osteoarthritis (OA) based on clinical, x-ray and biomarker variables using MRI as the gold standard in a population based study.

Methods: Subjects, 40-79 years, with knee pain were assemblified, stratified by age decade and gender, in a cross-sectional population-based study and evaluated clinically, with MRI, x-ray and biomarkers. MR cartilage (MRC) defects were scored 0-4 on 6 knee joint surfaces with subsequent application of a weighted MRC (wMRC) score, which reflects the mean depth of a given cartilage defect (MRC 0 or 1 = wMRC 0, MRC 2 = wMRC 0.25, MRC 3 = wMRC 0.75, MRC 4 = wMRC 1.0). The sum of all wMRC scores was used to determine the total knee score. Subjects were classified as No OA (NOA) (total knee score = 0), early OA (EOA) (total knee score 0.1-1.9) or advanced OA (AOA) (total knee score ≥ 2). X-rays were read using Kellgren-Lawrence [KL] 0-4 grading. Biomarkers (Bio) were log transformed and included serum and urine C2C and C1,2C, 846 epitope, CPII, CTX-II, COMP and hyaluronic acid. Clinical variables assessed in the models were age, gender, body mass index (BMI), alignment, gait, quadriceps atrophy, effusion and crepitus. A continuation-ratio ordinal regression model was used to simultaneously model 2 binary responses (normal versus non-normal; early versus advanced OA assuming abnormality is present) that represent two stages of disease progression. Partial proportional odds ratios were used to allow for different effects of a variable in the 2 stages. A bootstrap-based approach was adapted for variable selection. Models were evaluated based on prediction accuracy, Akaike’s Information Criterion (AIC), where a lower value indicates a better model fit, and the C-index, where a 1.0 score indicates a perfect model fit. All reported results are adjusted for stratum sampling weights.

Results: Of 255 subjects, 33 (13%) had NOA, 106 (43%) had EOA, 116 (44%) had AOA, 120.1

<table>
<thead>
<tr>
<th>NOA (n=33)</th>
<th>EOA (n=106)</th>
<th>AOA (n=116)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical variables only</td>
<td>12%</td>
<td>71%</td>
</tr>
<tr>
<td>X-ray only</td>
<td>0%</td>
<td>83%</td>
</tr>
<tr>
<td>Biomarkers only</td>
<td>6%</td>
<td>63%</td>
</tr>
<tr>
<td>Clinical + X-ray</td>
<td>15%</td>
<td>78%</td>
</tr>
<tr>
<td>Clinical + Bio</td>
<td>49%</td>
<td>71%</td>
</tr>
<tr>
<td>Clinical + X-ray + Bio</td>
<td>52%</td>
<td>76%</td>
</tr>
</tbody>
</table>

P225
DO OBESITY AND ANTHROPOMETRIC MEASURES SEPARATE SUBGROUPS OF KNEE OSTEOARTHRITIS?

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Purpose: To examine the relationship between obesity/anthropometric measures and osteoarthritis (OA) at the knee and hip in a UK case-control cohort - GOAL ("Genetics of Osteoarthritis and Lifestyle").

Methods: The GOAL cohort is an age and gender matched group of Caucasians comprised of hip (n=1008) and knee (n=1042) OA cases, referred to hospital with severe symptomatic large joint OA for consideration of surgery, and asymptomatic controls without large joint OA (n=1123) referred to hospital for intravenous urography. Height, weight, waist and hip circumference were measured during clinical assessment and retrospective estimates of weight from each decade were collected as part of an interview-based questionnaire on environmental factors. Odds ratios, crude and adjusted (e.g. age, social class, occupation, physical activity, smoking, oestrogen load (females only), 95% confidence intervals and p-values were calculated using logistic regression.

Results: BMI was a strong risk factor for knee and hip OA with obesity (BMI ≥30 kg/m²) showing greater risk than overweight (BMI ≥25<30 kg/m²). The risk was greater for knee than hip OA, and greater for women than men at the knee. All trends were significant at p<0.001 after adjustment for confounders. An increasing risk (p<0.001) was observed for hip and knee OA with duration of being overweight (never, current, middle age onwards, always). This risk was greater for women than men, e.g. in the always overweight group women (OR=14.2 (8.1-24.9) versus men (OR=4.1 (2.7-6.3)). There was a risk associated with increasing waist-hip ratio (WHR) (knees OR=1.7 (1.4-2.1), hip OR=1.6 (1.3-2.0) both p<0.001), which was lost after adjustment for BMI. A similar effect was observed with waist and hip circumference (WC and HC). However, stratifying the WHR analysis by BMI identified an increased number of obese female knee OA cases with a lower WHR, when compared to obese female controls (57.4%, p=0.02) although both low and high WHR groups had significant OR for OA when compared to controls. In women, the cases (n=182) had smaller WC (mean 101.6±1.4) compared to the obese female controls (n=135) (mean 111.1±1.7) p<0.001 but similar HC (123.0±1.6 versus 120.1±1.6) respectively, p=0.015). The data suggest that having a greater WC or HC gives an increased risk (OR=1.7, P=0.01 and 1.5, P=0.045 respectively) for knee OA in this obese female group. Since WC reflects central obesity which is a feature of the metabolic syndrome we looked for an association with related co-morbidities: high WHR was associated with diabetes (OR=2.3 (1.1-5.3) p=0.035) and showed a trend towards an association with reasonable accuracy, particularly for early and advanced stage of OA. The diagnostic implications of these findings will be of importance to future investigations of early knee OA.
with both hypertension and heart disease. In the high WHR group there was an increased association with nodal OA, defined clinically as nodes in at least two rays of each hand (OR=1.7 (1.0-3.0) p=0.063). A similar effect on sub-setting the WHR by BMI and associated increase in metabolic co-morbidities was observed in the overweight male knee OA group.

Conclusions: Consistent with previous literature in other OA cohorts, BMI is a major risk factor for hip and knee OA in both men and women. We have found that WHR, WC and HC are not independent measures of BMI. However, sub-setting the WHR by BMI has indicated that the different body fat distribution in obese women may affect co-morbidities and degree of other joint involvement. The mechanism is uncertain but may be linked to systemic metabolic effects.

P227
THE IMPACT OF CONCOMITANT PERSISTENT BACK PROBLEMS IN PEOPLE LIVING WITH HIP AND KNEE OSTEOARTHRITIS

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Purpose: Arthritis affects participation in broad roles and societal activities like employment, social involvement, personal relationships, and leisure activities. Generalized osteoarthritis (OA) typically affects the low back as well as the hips and knees. No studies have examined the impact of concomitant back problems on participation in people with hip and knee OA. Among people with long-standing hip and knee OA, our objective was to examine the impact of concomitant back problems on participation in life tasks.

Methods: An existing cohort of older community-living individuals with long-standing hip or knee OA were interviewed by telephone to determine their socio-demographics (age, gender, education, income), height and weight to calculate body mass index (BMI), general health (SF-36 general health scale), hip/knee pain and disability (WOMAC pain and physical function scores), the presence of persistent back problems (present/absent), pain attitude (Pain Catastrophizing Scale) and pain coping (Vanderbilt Pain Coping Scales for active and passive pain coping), depressive symptoms (CES-D) and social support (Lubben Social Network Scale). Participation was measured using the Jette Late-Life Disability Measure, which asks about frequency (How often do you do a certain activity?) of performance of everyday life tasks. Responses were compared for those who did and did not report persistent back problems, using t-tests for continuous variables and Chi square test for categorical variables. Multivariable linear regression was used to assess the effect of persistent back problems on each of frequency and capability of participation after adjusting for potential confounders. Results based on the first 293 survey participants are reported here.

Results: Of 293 participants, the mean age was 77 years (65-96 years); 221 (75.4%) were female. Mean BMI was 28.3 kg, 94% were Caucasian, 52% had ≥ 2 comorbid conditions, and 52% had an annual household income ≤ $20,000 Canadian. 116 individuals (39.5%) reported persistent back problems. Those who reported persistent back problems were similar to those who did not in age, education, income, BMI, and level of social support. However, those with persistent back problems reported worse general health (p=0.009), more depressed mood (p=0.005), greater pain and functional disability (p=0.0001 for both), lower active and higher passive coping and pain catastrophizing scores (p=0.02, p=0.0002, and p=0.01, respectively). Adjusting for these differences, individuals with persistent back problems had reduced frequency of participation in everyday life tasks (p=0.002) but were similar to those without back problems in terms of their perceived limitation in capability to participate (p=0.51).

Conclusions: In a community cohort with long-standing hip/knee OA, nearly half reported concomitant persistent back problems. Beyond the added burden in terms of pain and disability, individuals with concomitant back problems are participating in everyday life tasks significantly less than those without. Lack of participation negatively impacts life satisfaction and quality of life. Greater attention is needed to development and testing of interventions designed to improve participation in OA.

P228
PREVALENCE OF MUSCULOSKELETAL COMPLAINTS IN MEXICO. A POPULATION STUDY

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Purpose: To know the frequency, distribution and risk factors of musculoskeletal complaints in Mexican Population.

Methods: Cross-sectional home survey study. The National Health Surveys 2000 (NHS 2000) in Mexico, was done between September of 1999 to March of the 2000; the sample of homes was probabilistic, multi-stage, stratified and conglomerate. The NHS 2000 has different surveys. One of this is the adult survey, it has demographic data, perception of health, use of services in health and question about musculoskeletal complaints (pain and inflammation in different joints), the musculoskeletal complaints in adult population of NHS 2000 were analyzed. Statistical Analysis: Point prevalence of musculoskeletal complaints using descriptive statistic analysis among age, sex and state of Mexico was done. A logistic regression model was done for estimating odd ratio of risk factors.

Results: Samples of 45,294 subjects were interviewed 48% men and 52% women and an estimate population of 51.6 millions was calculated. The mean national prevalence of MSC was 26.2%, MSC of lower limbs is higher (23.5%) compared with MSC of upper limbs 15.4%, the prevalence difference between extremities was similar in all age groups studied (p <0.01). The mean national prevalence of MSC by joints and sex were: hip: 7.4% men (M) and 12.7% women (W); knee 14.3% M vs. 17.1% W; foot and ankle 3.12% M y 3.13% W; first finger 4.70% M y 6.80% W; shoulder 7.40% M vs. 10.5% W; elbow 5.4% M vs. 7.90% W; hand 7.4% M vs. 12.7% W. (p<0.01 between H vs. W). We...