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OBESITY, NOT OVERWEIGHT, INCREASES THE RISK OF INCIDENT AND SEVERE KNEE PAIN: RESULTS OF FOUR-YEAR FOLLOW-UP OF THE ELSA-BRASIL MUSCULOSKELETAL COHORT

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BACKGROUND

This study aimed to investigate if overweight and obesity increases the risk of developing frequent knee pain after four years of follow-up.

MATERIALS AND METHODS

This is a longitudinal analysis using data from the ELSA-Brasil musculoskeletal (MSK) cohort. Participants eligible for this analysis were those free from chronic (lasted > 6 months) and/or frequent (lasted most days of at least 1 month) knee pain in the previously year at baseline assessment (2012–2014), and who have completed four years follow-up (2015–2019). At baseline, nutrition participants' status was classified, according to body mass index (BMI), as eutrophic (≤ 24.9 kg/m²), overweight (25–29.9 kg/m²), obese level I (30–34.9 kg/m²) and obese level II/III (≥ 35 kg/m²). During follow-up, incidence and number of frequent knee pain (pain that lasted most days in the past month) were investigated through annual telephone interviews using standardized questionnaires. The association of nutrition participants' status (eutrophic as reference) with cumulative incidence of frequent knee pain (no/yes) and number of frequent knee episodes (0, 1, 2, 3–4) were assessed by binomial and multinomial logistic regressions, adjusted by potential confounders (sex, age, self-reported skin color/race, education, nature of occupation, leisure-time physical activity and depression).

RESULTS

A total of 1,896 participants (mean age 55.2 ± 8.83 years, 50.6% male) were included, 41% overweight and 18.8% obese (15.0% level I and 3.8% level II/III). The cumulative incidence of frequent knee pain was 24.5%, with 10.0% reporting multiple episodes (2 episodes in 5.9% and 3–4 in 4.1%). After all adjustment, obesity level I (odds ratio [OR]: 1.79; confidence interval [CI95%]: 1.30–2.46) and II/III (OR: 2.56 95%CI: 1.51–4.33) increased the risk of having frequent knee pain. The magnitudes of the associations within an obesity grade were consistently stronger for multiple pain episodes than for the occurrence of one episode, with individuals with level II/III obesity presenting over three times the risk of 2 to 4 pain episodes than eutrophic ones. The risks of having 1, 2 and 3–4 pain episodes escalated with increasing levels of obesity. For example, the risk of having 3–4 pain episodes between participants with level I obesity was 2.22 (CI95%: 1.16–4.26) and 3.47 (1.34–8.96) for obesity level II/III. In all analyses dose-response patterns were identified.

CONCLUSION

Our study showed that obesity was an important risk factor for developing frequent knee pain after four years of follow-up. We found relevant OR, even after adjustment for potential confounders, and dose-response gradient with increasing levels of the body mass index.

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REFERENCES

1. Costa ABP, Machado LAC, Telles RW, Barreto SM. Dose-response associations of clinical markers of obesity and duration of exposure to excess weight with chronic musculoskeletal pain: cross-sectional analysis at baseline of ELSA-Brasil Musculoskeletal cohort. *Rheumatol Int.* 2020;40(6):881–91. <https://doi.org/10.1007/s00296-020-04557-w>
2. Tanamas SK, Wluka AE, Davies-Tuck M, Wang Y, Strauss BJ, Proietto J, Dixon JB, et al. Association of weight gain with incident knee pain, stiffness, and functional difficulties: a longitudinal study. *Arthritis Care Res (Hoboken)*. 2013;65(1):34–43. <https://doi.org/10.1002/acr.21745>
3. Lee SH, Son C, Yeo S, Ha IH. Cross-sectional analysis of self-reported sedentary behaviors and chronic knee pain among South Korean adults over 50 years of age in KNHANES 2013-2015. *BMC Public Health*. 2019;19(1):1375. <https://doi.org/10.1186/s12889-019-7653-9>