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## Abstract

# Predictive Value of Ankle Fracture for Osteoporosis at the Fracture Liaison Service Is Dependent on Gender and May Be Related to Alcohol Use <sup>†</sup>

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**Abstract:** Osteoporosis, characterised by a reduction in bone mass, is a common musculoskeletal condition, with diet and lifestyle factors including heavy alcohol consumption now recognised to exacerbate bone loss. Fracture Liaison Services (FLS), which screen patients over 50 years who have suffered a low trauma fracture, are considered vital in the early diagnosis of osteoporosis. Although FLS has made significant contributions in preventing secondary fractures, there remains variation in patient case finding between services. Therefore, we aimed to assess the value of an ankle or wrist fracture in the diagnosis of osteoporosis taking into consideration the patient's history of alcohol consumption. Data on 500 consecutive patients observed by the FLS with either ankle or wrist fractures was surveyed. Data on gender, bone mineral density (BMD) measured by T-score, and history of heavy alcohol consumption (>28 units/week) was collected. Osteoporosis was defined as a T-score below  $-2.5$  at any site. Logistic regression models, adjusting for age and body mass index, investigated associations between fracture type and diagnosis of osteoporosis. Data was available in 499 patients (114 M, 385 F) with 313 presenting with a wrist fracture whilst 186 presented with an ankle fracture. Some 6.8% ( $n = 34$ ) of patients were deemed heavy alcohol consumers and over a quarter ( $n = 128$ ) were considered osteoporotic. Males ( $n = 19$ ) who were heavy alcohol consumers had a significantly lower hip and spine BMD (Both  $p = 0.01$ ) when compared to those who were not. Males with an ankle fracture who were not heavy alcohol consumers also had a significantly lower risk of presenting with osteoporosis (OR 0.12, 95% CI: 0.03–0.59,  $p = 0.01$ ). No significant differences in BMD were observed amongst females who were heavy alcohol consumers and those who were not. Additionally, no significant associations were noted between fracture type and presentation of osteoporosis in females. Assessment of alcohol consumption should be included when considering the value of ankle fractures for predicting osteoporosis in males. Future research using comprehensive assessments of alcohol consumption is warranted to confirm these findings. Focus should be placed on developing a standardised approach for assessing alcohol consumption which can be utilised across all FLS.

**Keywords:** osteoporosis; alcohol



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