



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

McMullan, J., McSorley, E., Hunter, R., Pattison, D., & Armstrong, D. (2024). Predictive Value of Ankle Fracture for Osteoporosis at the Fracture Liaison Service Is Dependent on Gender and May Be Related to Alcohol Use. In *Proceedings of 14th European Nutrition Conference FENS 2023* (Vol. 91, pp. 1-2). Article 280 (Proceedings). MDPI. Advance online publication. <https://doi.org/10.3390/proceedings2023091280>

[Link to publication record in Ulster University Research Portal](#)

### Published in:

Proceedings of 14th European Nutrition Conference FENS 2023

### Publication Status:

Published online: 06/02/2024

### DOI:

[10.3390/proceedings2023091280](https://doi.org/10.3390/proceedings2023091280)

### Document Version

Publisher's PDF, also known as Version of record

### General rights

Copyright for the publications made accessible via Ulster University's Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

### Take down policy

The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact [pure-support@ulster.ac.uk](mailto:pure-support@ulster.ac.uk).

## 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>

James McMullan <sup>1</sup>, Emeir McSorley <sup>1</sup>, Rhonda Hunter <sup>2</sup>, Denise Pattison <sup>2</sup> and David Armstrong <sup>2,\*</sup>

<sup>1</sup> Nutrition Innovation Centre for Food and Health, Ulster University, Coleraine BT52 1SA, UK; mcmullan-j27@ulster.ac.uk (J.M.)

<sup>2</sup> Fracture Liaison Service, Altnagelvin Area Hospital, Glenshane Road, Londonderry BT47 6SB, UK

\* Correspondence: david.armstrong@westerntrust.hscni.net

<sup>†</sup> Presented at the 14th European Nutrition Conference FENS 2023, Belgrade, Serbia, 14–17 November 2023.

**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



**Citation:** McMullan, J.; McSorley, E.; Hunter, R.; Pattison, D.; Armstrong, D. Predictive Value of Ankle Fracture for Osteoporosis at the Fracture Liaison Service Is Dependent on Gender and May Be Related to Alcohol Use.

*Proceedings* **2023**, *91*, 280.

<https://doi.org/10.3390/proceedings2023091280>

[proceedings2023091280](https://doi.org/10.3390/proceedings2023091280)

Academic Editors: Sladjana Sobajic and Philip Calder

Published: 6 February 2024



**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Author Contributions:** Conceptualization and Methodology; D.A.; data acquisition; D.A., R.H. and D.P.; formal analysis, J.M., Writing—Original draft preparation; J.M. and D.A.; writing—review and editing; E.M. and D.A. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable—Ethical review and approval were waived for this study due to being part of a clinical survey.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** NHS Clinical Database.

**Conflicts of Interest:** D.J.A. has received payment for advisory board work and support to attend meetings from UCB Pharma and payment for educational presentations from Internis Pharma. J.M., E.M., D.P. and R.H. declare no conflicts of interest.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.