



Paul Butterworth

BPod MPod FACPS PhD candidate (LTU)

Course coordinator podiatry

Accredited foot surgeon Southport Day Hospital

The relationship between mental health and foot pain

- P Butterworth^{1,2}, DM Urquhart³, FM Cicuttini³, H Menz², B Strauss⁴, J Proietto⁵, J Dixon⁶, G Jones⁷, AE Wluka³
- ¹Department of Podiatry, La Trobe University, ²Lower Extremity and Gait Studies Program, La Trobe University ⁴Department of Epidemiology and Preventive Medicine, Monash University, ⁵Department of Medicine, Monash University, ⁶University of Melbourne and Austin Health Melbourne, ⁷Baker IDI Heart and Diabetes Institute and Alfred Hospital, ⁸Menzies Research Institute
- **Sources of Funding:** National Health and Medical Research Council, Monash University, Shepherd Foundation, and Royal Australasian College of Physicians. Dr Butterworth is funded by an Australian Postgraduate Award

Citation

- Butterworth PA, Urquhart DM, Cicuttini FM, et al. The relationship between mental health and foot pain. *Arthrit Care Res* 2014; doi: 10.1002/acr.22292. [Epub ahead of print]

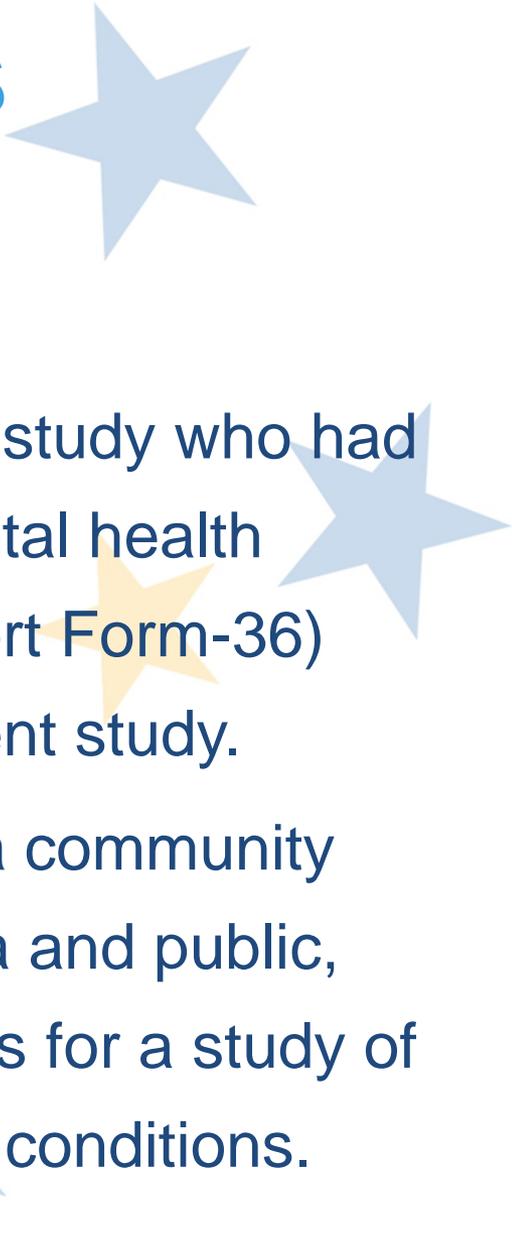
Introduction

- Foot pain impairs functional activities of daily living in older adults and reduces health-related quality of life¹.
- Several risk factors for foot pain have been identified, including increased age, female sex¹ and obesity².
- Poor mental health and foot pain have been associated in cross sectional studies^{1,3,4}. Whether mental health affects the outcome of foot pain is not known.

Study Aim:

- In a population with foot pain, to identify factors that affect the outcome of foot pain over 3 years.

Study Methods

The slide features several decorative stars of varying colors (light blue and yellow) scattered across the background.

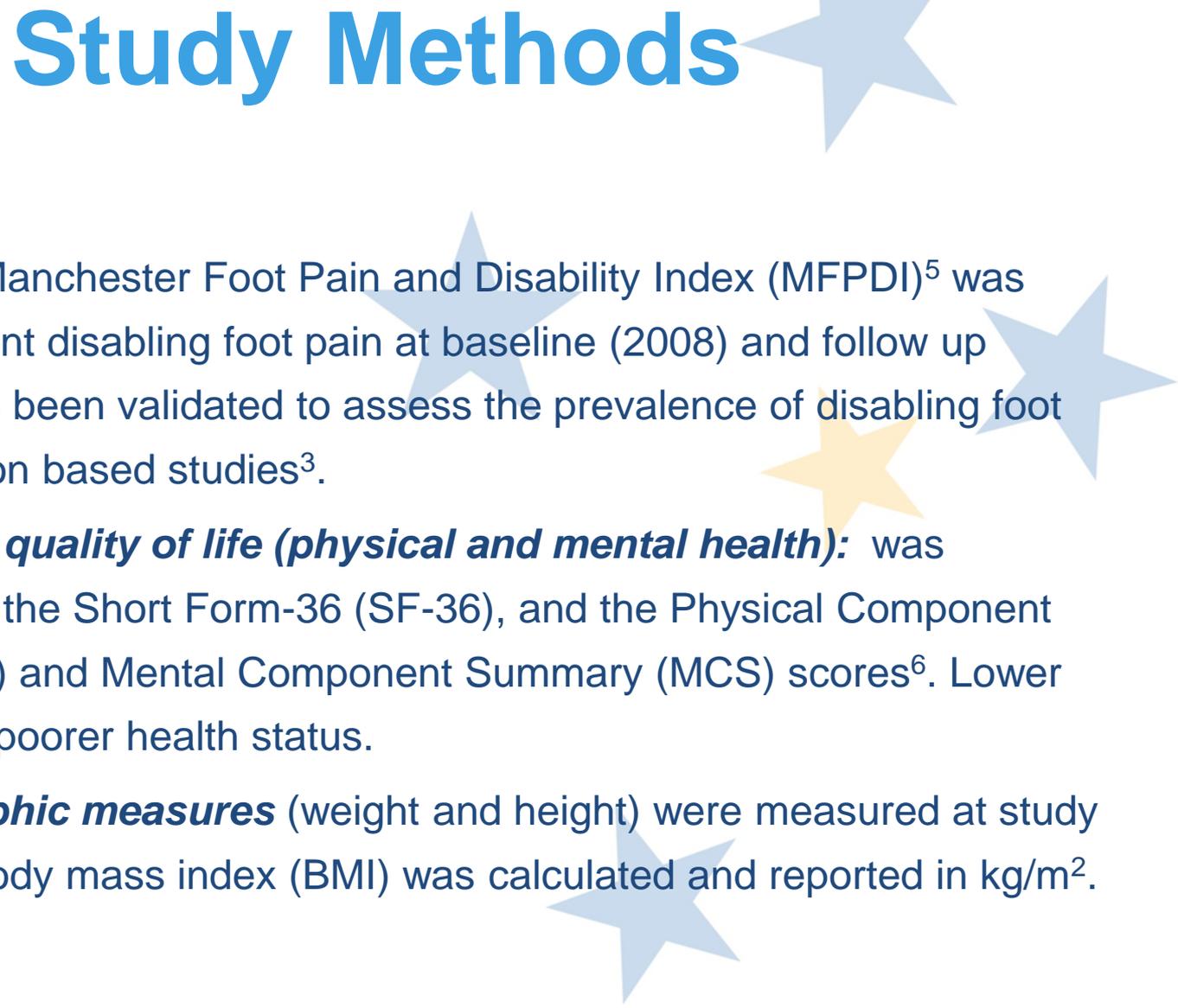
- **Study population**
- Eighty three participants from a previous study who had foot pain and for whom measures of mental health (Mental Component Summary of the Short Form-36) were available, were eligible for the current study.
- Participants were initially recruited from a community based population through the local media and public, private, and community weight loss clinics for a study of the effects of obesity on musculoskeletal conditions.

Study Methods



- **Ethical approval**
 - The study was approved by the Alfred Human Research and Ethics Committee (HREC), the Monash Standing Research Ethics Committee, the Austin Health HREC, and the University of Melbourne Central HREC.
 - Informed consent was obtained from all participants.
- 
- 
- 
- 

Study Methods



- **Data collection**
- **Foot pain** the Manchester Foot Pain and Disability Index (MFPDI)⁵ was used to document disabling foot pain at baseline (2008) and follow up (2011). This has been validated to assess the prevalence of disabling foot pain in population based studies³.
- **Health related quality of life (physical and mental health):** was assessed using the Short Form-36 (SF-36), and the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores⁶. Lower scores indicate poorer health status.
- **Anthropomorphic measures** (weight and height) were measured at study baseline, and body mass index (BMI) was calculated and reported in kg/m².

Study Methods



- **Statistical analysis**
 - ***Change in foot pain*** was determined subtracting baseline MFPDI score from the follow up; a decrease in the MFPDI score indicating improved foot pain and an increase indicating deterioration in foot pain. Multivariate linear regression was used to identify factors predicting change in foot pain, taking into account potentially important factors.
- 
- 
- 
- 

Results

- 62 (75%) of eligible participants completed the follow up study.
- Participants with improved foot pain had a significantly higher baseline MCS score than those whose pain deteriorated ($P=0.02$) (table 1).
- Within the MCS, the only SF-36 domain to differ significantly between those with improved foot pain compared to those whose pain deteriorated was vitality, being significantly higher ($P=0.02$) in those with improved foot pain (Table 1).
- In the multivariate analysis a significant association was shown between higher baseline MCS (beta coefficient -0.29, 95% confidence interval -0.42 to -0.01) and a slower progression in foot pain, adjusted for age, sex, BMI and PCS (Table 2).

Results

Table 1: Participant characteristics¹

	Foot pain improved (n=35)²	Foot pain deteriorated (n = 27)	P value³
Age (years)	46.9 ± 8.8	49.5 ± 8.7	0.24
Sex, women (%)	27 (77)	22 (81)	0.68 ⁴
BMI (kg/m ²)	35.2 ± 8.2	34.9 ± 9.2	0.93
Baseline MFPDI score	14.0 ± 9.0	10.8 ± 6.7	0.13
SF-36			
Physical component (PCS)	44.3 ± 10.9	45.0 ± 11.0	0.81
Mental component (MCS)	50.1 ± 12.9	42.5 ± 12.6	0.02
SF-36 Domain scores			
Physical function	68.7 ± 23.5	70.3 ± 23.6	0.79
Physical role	75.0 ± 38.3	63.9 ± 38.8	0.27
Pain	59.0 ± 24.9	59.0 ± 26.7	0.99
General health	67.6 ± 24.2	62.7 ± 21.8	0.41
Vitality	56.6 ± 21.0	42.2 ± 25.4	0.02
Social functioning	82.9 ± 26.3	74.0 ± 21.6	0.17
Emotional role	77.1 ± 38.6	56.8 ± 45.1	0.06
Mental health	75.0 ± 18.5	66.8 ± 18.2	0.08

¹ Values are the mean ± SD unless otherwise indicated

² Includes two participants whose scores remained unchanged

³ *P* calculated for difference between subjects with stable and deteriorating foot pain using Independent-samples *t*-test unless otherwise indicated

⁴ *P* calculated for difference between subjects with stable and deteriorating foot pain using Chi-square test

Results

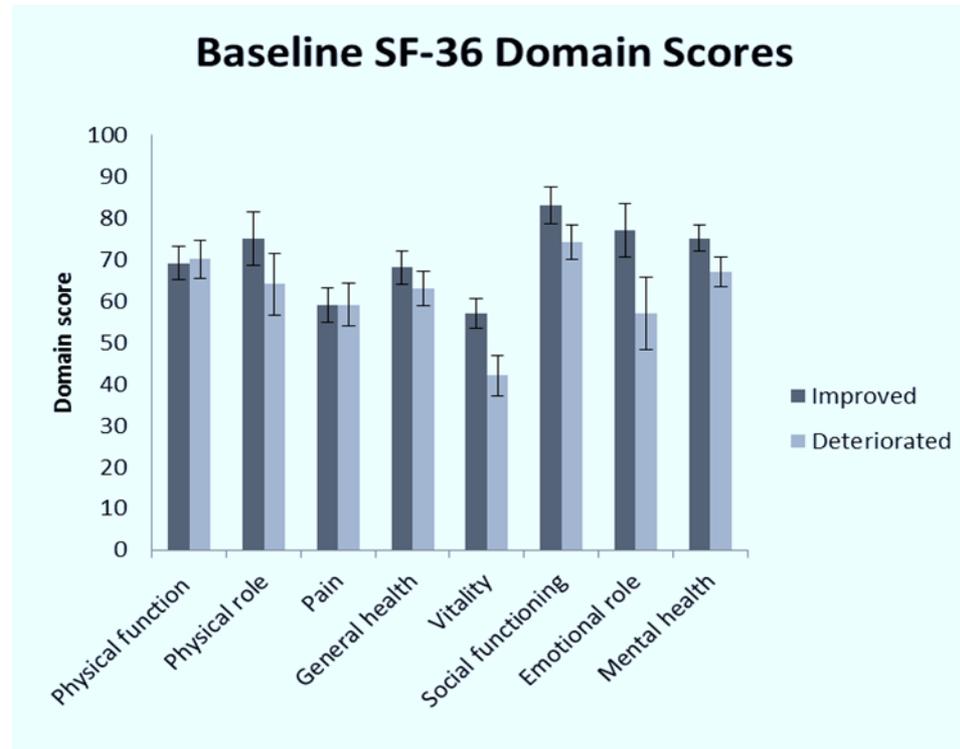


Figure 1 Baseline SF-36 domain scores

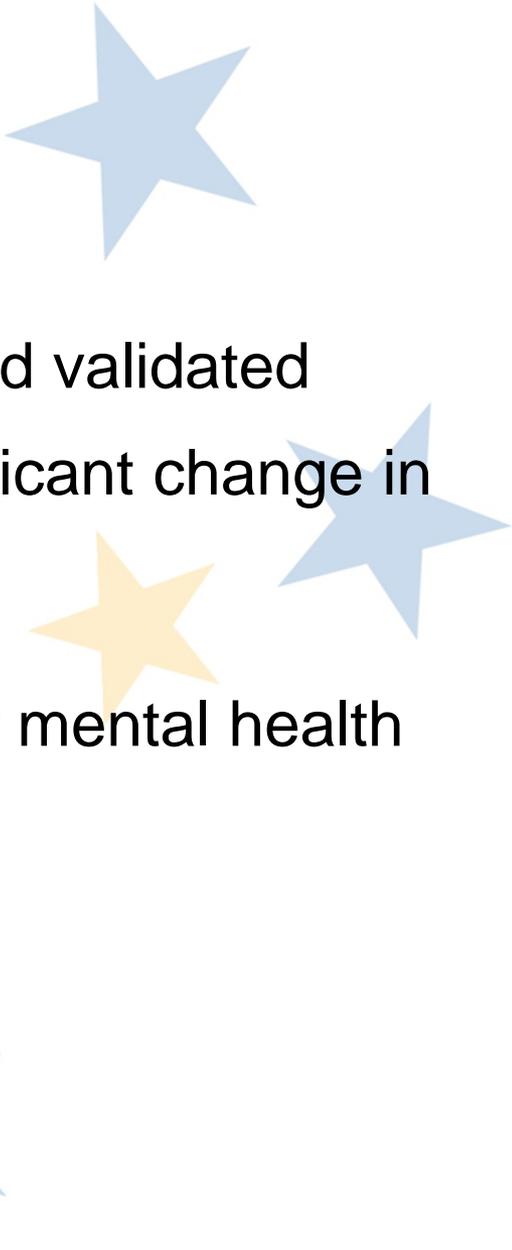
Results

Table 2: Regression coefficients for the association between baseline predictors with change in foot pain over 3 years among 62 men and women with baseline foot pain

	Univariate beta coefficient(95% CI)	P value	Multivariate beta coefficient(95% CI)¹	P value
Age	0.08 (-0.20, 0.37)	0.55	0.10 (-0.17 to 0.40)	0.43
Sex	-0.03 (-6.74, 5.30)	0.81	-0.14 (-9.80 to 3.30)	0.32
BMI	-0.03 (-0.32, 0.26)	0.84	0.02 (-0.35 to 0.31)	0.90
MCS	-0.23 (-0.34, 0.02)	0.08	-0.29 (-0.42 to -0.01)	0.04
PCS	0.05 (-0.18, 0.27)	0.67	0.01 (-0.26, 0.27)	0.97

¹ Adjusted for age, sex, BMI, MCS and PCS

Study Limitations

The slide features several decorative stars of varying colors (light blue and yellow) scattered across the background.

- Although the MFPDI is an established and validated measure of foot pain, the minimally significant change in MFPDI is not known⁹.
- MCS provides only a general measure of mental health status.
- Weight change was not measured

Summary

- Mental component score at baseline was higher in adults whose foot pain improved over the study period.
- Higher baseline mental component score was associated with slower progression in foot pain over 3 years. Foot pain could be related to mental health in the same manner as other chronic musculoskeletal conditions.
- Clinicians treating foot pain should consider the patient's mental health in their management, consistent with their management of other chronic musculoskeletal conditions.

References

1. Hill CL, et al Prevalence and correlates of foot pain in a population-based study: the North West Adelaide health study. *J Foot Ankle Res* 2008;1(2).
2. Butterworth PA, et al The association between body mass index and musculoskeletal foot disorders: a systematic review. *Obes Rev* 2012;13(7):630-42.
3. Menz HB, et al Foot pain in community-dwelling older people: an evaluation of the Manchester Foot Pain and Disability Index. *Rheumatology (Oxford)* 2006;45(7):863-67.
4. Menz HB, et al Predictors and persistence of foot problems in women aged 70 years and over: a prospective study. *Maturitas* 2011;68(1):83-87.
5. Garrow AP, et al Development and validation of a questionnaire to assess disabling foot pain. *Pain* 2000;85(1-2):107-13.
6. Ware, J. SF-36 Physical and Mental Health Summary Scales: A User's Manual, 1994. Boston: The Health Institute, New England Medical Center.
7. Nicholas, MK. Mental disorders in people with chronic pain: an international perspective. *Pain* 129.3 (2007): 231-232.
8. Dekker J, T et al Negative affect, pain and disability in osteoarthritis patients: the mediating role of muscle weakness. *Behav Res Ther* 1993;31(2):203-06.
9. Riskowski JL, et al Measures of foot function, foot health, and foot pain: American Academy of Orthopedic Surgeons Lower Limb Outcomes Assessment: Foot and Ankle Module (AAOS-FAM), Bristol Foot Score (BFS), Revised Foot Function Index (FFI-R), Foot Health Status Questionnaire (FHSQ), Manchester Foot Pain and Disability Index (MFPDI), Podiatric Health Questionnaire (PHQ), and Rowan Foot Pain Assessment (ROFPAQ). *Arthrit Care Res* 2011;63 Suppl 11:S229-39.

Quick plug

- Podiatry student clinic at Bilinga campus now taking patients
- ESWT
- Laser treatment fungal nail infections
- Usual podiatric interventions at discounted rates

- **5589 3252**

- **Thanks for having me!!!**