

## Introduction

Osteoporosis is a chronic metabolic bone disease characterized by a reduction in bone mass, degraded bone microarchitecture and increased risk of fracture [1]. The morbidity associated with osteoporosis is regarded as being a consequence of fracture [2]. Vertebral fractures in particular are associated with increased mortality, increased back-pain and reduced mobility and function [1,3,4].

The consequences of vertebral fracture in an osteoporotic individual is likely to be a reduced Health-related quality of life (HRQOL) [5]. HRQOL encompasses the spectrum of physical, mental and social well-being [5] and economic, political, cultural and spiritual outlook [6]. The QUALEFFO-41 (questionnaire of the European Foundation for Osteoporosis) is a commonly used tool for the assessment of HRQOL in osteoporotic individuals

Increased back-pain is a feature associated with known vertebral fractures in osteoporotic individuals. Visual analogue scales (VAS) are quantitative tools that measure an individual's perception of pain. The use of such scales has been further validated by the findings of fMRI measurements of the brain's response to pain [7].

## Aim

To investigate the use of a VAS score as a predictor of health-related quality of life in individuals with and without a self-reported history of low-trauma fracture

## Method

80 patients (66 female, 14 male) with osteoporosis and / or current or recent (within the last 6 months) low back-pain were recruited. These individuals had already been referred for bone mineral density (BMD) measurements of the lumbar spine and hip (Hologic Delphi, Bedford USA).

Subjects were invited to undergo instant vertebral assessment (IVA) in addition to DXA and were asked to complete a QUALEFFO-41 questionnaire (reduction in HRQOL increasing with increased score), VAS scale to indicate current back-pain (1—10 with 10 being the most severe pain) and a fracture history questionnaire (St Thomas' hospital).

## Study Population

Population Characteristics	Whole Group Mean (SD)
N	80 (66 female, 14 male)
Mean Age (y)	62.6 (15.2)
Mean Height (cm)	161.4 (8.9)
Mean Weight (kg)	63.7 (15.4)
Mean BMI (kg/m <sup>2</sup> )	24.4 (5.2)
Lumbar Spine T Score	-2.1 (1.5)
Neck of Femur T Score	-2.0 (1.0)
Total Hip T Score	-1.7 (1.1)
VAS score of current back-pain	2.5 (3.1)
Total QUALEFFO-41 score	29.6 (18.0)

## Data Analysis

Data analysis was undertaken using the MS-Excel data analysis package, the T-test for data with unequal variance and a 95% confidence interval.

Subjects were divided into two groups based upon their T score at any site:

- Group 1: osteoporotic
- Group 2: normal / osteopenic

Characteristics	Group 1 Mean (SD)	Group 2 Mean (SD)
N	40	40
Mean Age (y)	62.6 (13.2)	62.5 (17.2)
Mean Height (cm)	158.9 (7.9)	163.8 (9.2)
Mean Weight (kg)	58.4 (12.9)	69.0* (16.0)
Mean BMI (kg/m <sup>2</sup> )	23.1 (4.7)	25.7 (5.4)
Lumbar Spine T Score	-3.1 (1.1)	-1.1* (1.1)
Neck of Femur T Score	-2.6 (0.8)	-1.5* (0.8)
Total Hip T Score	-2.3 (0.8)	-1.1* (1.1)
VAS score of current back-pain	2.3 (2.9)	2.7 (3.3)
Total QUALEFFO-41 score	29.4 (18.2)	29.8 (18.0)

\* p = < 0.05 when compared to group 1

## Data Analysis (continued)

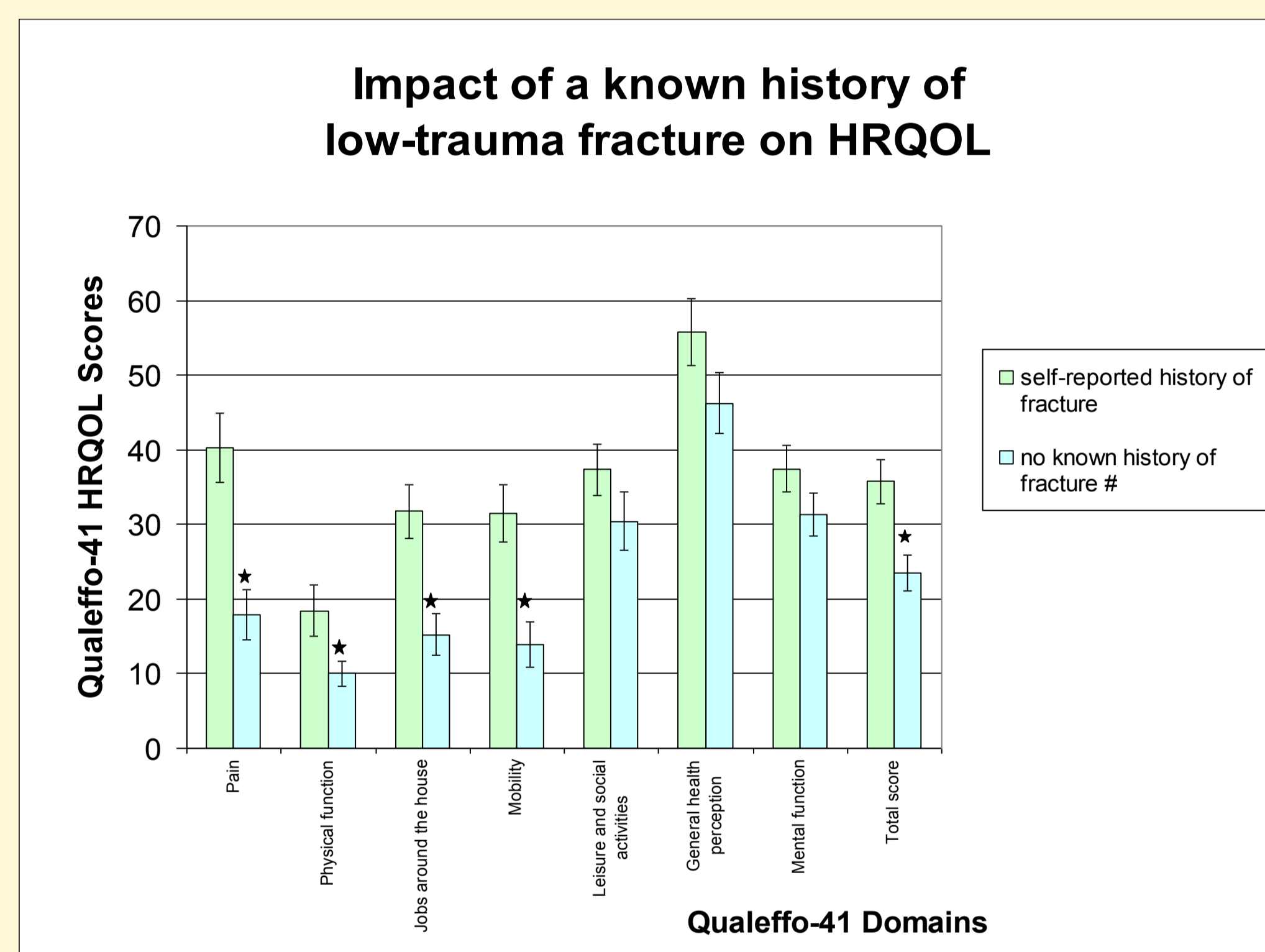
When divided by a self-reported history of low-trauma fracture there was a significant difference in terms of HRQOL and VAS score of current back-pain.

Group 1 = self-reported history of low-trauma fractures

Group 2 = no known history of low-trauma fractures

Characteristics	Group 1 Mean (SD)	Group 2 Mean (SD)
N	48	32
Mean Age (y)	66.9 (12.1)	58.3* (16.9)
Mean Height (cm)	160.6 (9.5)	162.1 (8.2)
Mean Weight (kg)	64.8 (13.9)	62.6 (16.9)
Mean BMI (kg/m <sup>2</sup> )	25.0 (4.5)	23.8 (5.8)
Lumbar Spine T Score	-2.2 (1.5)	-2.0 (1.4)
Neck of Femur T Score	-2.3 (0.9)	-1.8* (1.0)
Total Hip T Score	-2.0 (0.8)	-1.4* (1.3)
VAS score of current back-pain	3.5 (3.4)	1.5* (2.5)
Total QUALEFFO-41 score	35.7 (18.7)	23.4* (15.2)

\* p = < 0.05 when compared to group 1



★ p = < 0.05 when compared to group 1

## Summary

There is a significant difference between those individuals with a self-reported history of fracture both in terms of quality of life (p = 0.0009) and VAS score of current back-pain (p = 0.002).

Conversely no significant difference in HRQOL was demonstrated between osteoporotic and osteopenic / normal subjects. This supports the principle that the morbidity associated with osteoporosis is as a result of factors other than reduced bone mineral density.

There is now an increasing awareness that osteoporotic fractures at any site may substantially impact upon an individual's quality of life [4] and the correlation between self-reported low-trauma fracture and reduced quality of life further supports

## References

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