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## RESEARCH LETTER

### Health-related quality of life in metabolically healthy obese individuals

#### Introduction

Metabolically healthy obese (MHO) individuals have low burden of cardiometabolic risk factors. We aimed at investigating whether MHO individuals also have better health-related quality of life (HRQoL) than metabolically abnormal obese (MAO) individuals in a Finnish apparently healthy, middle-aged population.

#### Material and methods

A population survey was carried out in an industrialised Finnish small town Harjavalta in 2005–2006. We posted a risk factor survey and a tape for measurement of waist to all home-dwelling persons aged 45–70 years ( $n = 2856$ ). Participation rate was 73%. All respondents with waist circumference  $\geq 80$  cm in women and  $\geq 94$  cm in men were invited for further examination.

Public health nurses examined 1469 subjects. Body mass index (BMI) was calculated as weight (kg) divided by the square of height ( $m^2$ ). Blood pressure was measured twice, and the mean value was used in the analysis. Glucose and lipid profile were determined in fasting plasma samples. HRQoL was assessed with the Short-form Health Survey (SF-36) [1] before the physical examination was performed.

Metabolic syndrome was defined according to the harmonisation definition [2]. MHO and MAO phenotypes were defined as  $BMI \geq 30.0$  kg/ $m^2$  without or with metabolic syndrome, respectively. Statistical comparisons between groups were made by analysis of variance or chi square test. Information about chronic comorbidities and medication was gathered from questionnaires and medical records. For the analyses described here, patients with any chronic comorbidities were excluded.

#### Results

Of the 1187 study subjects without chronic comorbidities, 319 (26.9%) were obese (mean age  $57.4 \pm 6.8$  years, 60.8% women). The prevalence of MHO phenotype among obese individuals was 31.0% (99/319).

Table 1 shows the characteristics and the HRQoL dimensions of the subjects according to obesity phenotypes. Although the general health scale was impaired in MAO subjects, the mental and physical component summaries were comparable between MHO and MAO individuals.

#### Discussion

We conclude that in Finnish obese subjects without co-morbidities, the overall HRQoL is equal in MHO and MAO individuals. Of the SF-36 dimensions, only general health scale was better among MHO than MAO subjects.

For the time being, there is no standardised definition to identify MHO individuals for research protocols or in clinical practice. We used the same definition as the Finnish national survey, in which MHO phenotype was observed in 9% of obese men and in 16% of obese women aged 45–74 years [3]. In our cohort, the MHO phenotype was more frequent probably due to younger and apparently healthy participants. The prevalence of obesity in Finnish adult population is estimated to be 21% in women and 19% in men [4].

Also differences in study sample populations and methods used make direct comparisons between studies difficult. The same definition of MHO and the same HRQoL measure as in the present study were used in an Australian study among randomly selected adults  $\geq 18$  years old and free of cardiovascular disease [5]. In this study population, the MHO demonstrated higher mental and physical summary scores than MAO subjects, although the exact figures were not reported [5]. Usually, a 3–5-point



**Table 1** Characteristics and health-related quality of life dimensions of the obese individuals according to metabolic status.

	MHO n = 99	MAO n = 220	P-Value
<b>Demographics</b>			
Age, years, mean (SD)	56.6 (6.4)	57.8 (6.9)	0.12
Female, n (%)	68 (68.7)	126 (57.3)	0.053
White collar worker, n (%)	29 (30.2)	53 (25.0)	0.34
Current smoker, n (%)	16 (16.2)	34 (15.5)	0.87
Body mass index, kg/m <sup>2</sup> , mean (SD)	33.4 (4.0)	34.1 (4.0)	0.17
<b>SF-36, mean (SD)</b>			
Physical functioning	79.5 (20.9)	76.2 (21.3)	0.20
Role physical	76.3 (34.1)	73.9 (37.2)	0.59
Bodily pain	68.8 (23.7)	69.0 (24.2)	0.95
General health	62.4 (17.1)	57.5 (17.7)	0.023
Vitality	69.4 (19.6)	66.7 (20.1)	0.29
Social functioning	87.5 (19.4)	87.6 (18.1)	0.98
Role emotional	87.8 (26.0)	84.1 (30.1)	0.30
Mental health	80.2 (15.3)	77.9 (17.1)	0.26
Physical component summary	46.1 (8.8)	44.8 (9.5)	0.28
Mental component summary	54.6 (8.6)	53.7 (8.8)	0.39

*Abbreviations:* MHO, metabolically healthy obese; MAO, metabolically abnormal obese; SF-36, Short-form Health Survey.

difference in the SF-36 scores is considered clinically relevant [1,6].

The major limitation of our study is the cross-sectional design, so we cannot determine any causal relationships. The strengths of the study are that the data comes from a community-based sample of the middle-aged Finnish population, chronic illnesses affecting HRQoL were excluded, and the measurements were made by trained medical staff.

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