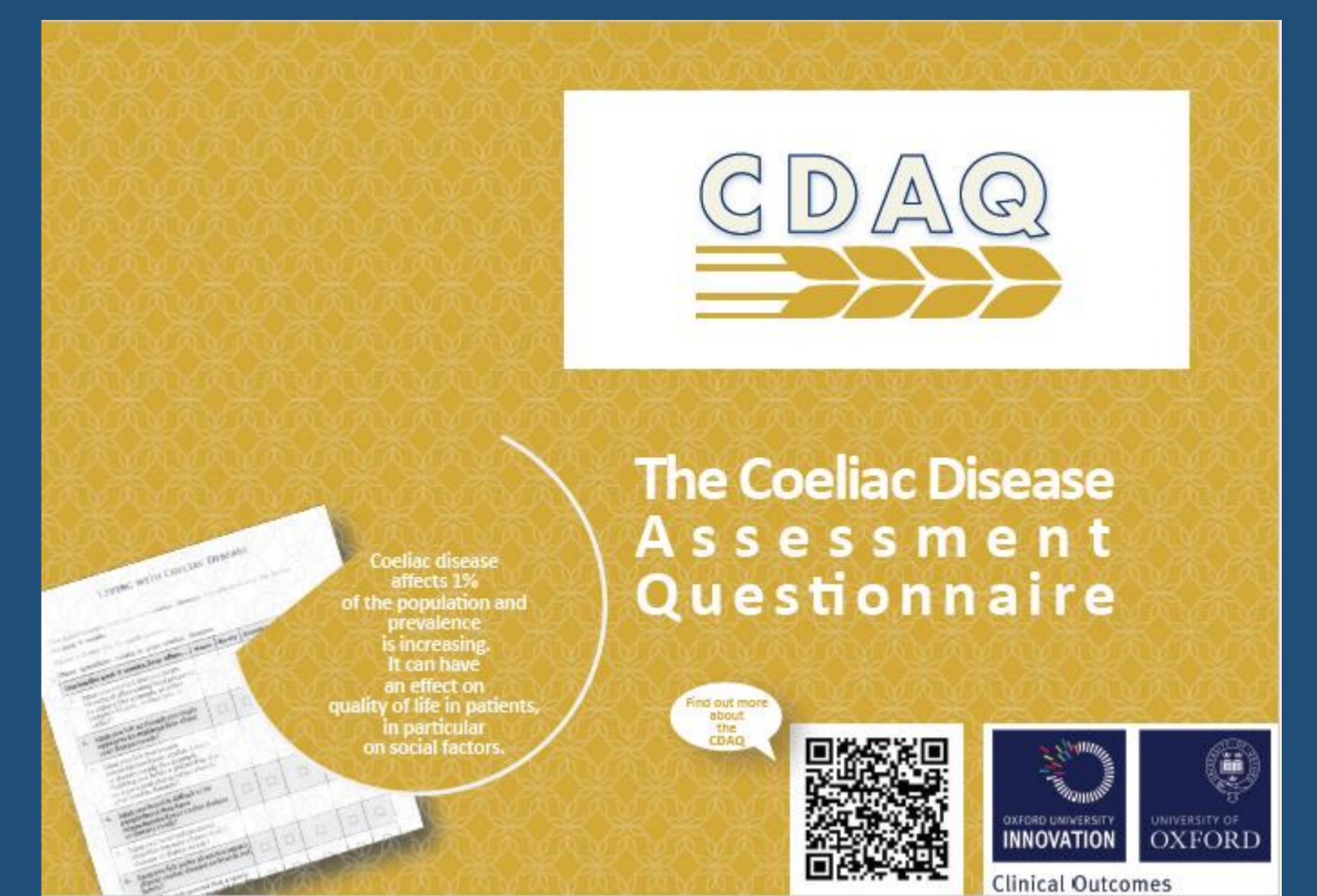


Psychometric properties of the Coeliac Disease Assessment Questionnaire (CDAQ)

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Aims

Coeliac disease is a chronic autoimmune condition that affects the small intestine, for which the only treatment at present is a gluten-free diet (GFD). Following a GFD can be burdensome, with difficulties faced in various aspects of daily life. The Coeliac Disease Assessment Questionnaire (CDAQ) is a new patient-reported outcome measure, which assesses quality of life (QOL) in adults with coeliac disease. The CDAQ is comprised of 32 items addressing the following five dimensions: stigma, social isolation, symptoms, dietary burden, and worries and concerns. The aim of this study was to assess the psychometric properties of the CDAQ.

Methods

The CDAQ was mailed to 800 members of Coeliac UK aged 18 years or over, who lived in the UK, and reported a medical diagnosis of coeliac disease. The sample was stratified by gender, age, and ethnicity. Respondents were also asked to complete the SF-36v2, and the CDAQ for a second time after two weeks. CDAQ dimension scores and an overall index score were calculated. Internal consistency reliability was assessed using Cronbach's alpha. Test-retest reliability was assessed using the intraclass correlation coefficient (ICC). Construct validity was assessed by exploring correlations between dimensions of the CDAQ and the SF-36v2, against hypotheses, using Spearman's correlation coefficient. Known groups validity was assessed by comparing overall index scores by gender using an independent samples t-test and by self-reported impact of coeliac disease using ANOVA.

Results

A total of 276 (34.5%) respondents returned a questionnaire, of which 167 also completed the follow-up questionnaire. Missing data was very low, with a maximum of 3 respondents (1.1%) not completing any one item.

Internal consistency

Cronbach's alpha ranged between 0.82 and 0.87 for all dimensions (Table 1).

Test-retest reliability

- The majority of respondents (n=145, 89.0%) returning the follow-up questionnaire rated the impact of their coeliac disease as 'about the same' as when they had completed the first questionnaire. This group were included in the analysis.
- Mean test-retest interval – 19 days (range: 13-43 days)
- ICCs ranged from 0.79 to 0.89 (Table 1)

Table 1: Internal consistency (Cronbach's alpha) and test-retest reliability (ICC)

Dimension	α	ICC
Overall index score	-	0.89
Stigma	0.87	0.85
Dietary burden	0.87	0.83
Symptoms	0.86	0.80
Social isolation	0.86	0.87
Worries and concerns	0.82	0.79

Construct validity

Correlations between CDAQ dimensions and the SF-36v2 are shown in Table 2. All correlations were in the expected direction (i.e. positive).

Table 2: Spearman correlation coefficients between CDAQ dimensions and the SF-36v2

CDAQ dimensions	SF-36v2 Components		SF-36v2 Dimensions							
	PCS	MCS	PF	RP	BP	GH	VT	SF	RE	MH
Overall index score	0.38*	0.60*	0.22*	0.34*	0.48*	0.60*	0.59*	0.58*	0.37*	0.60*
Stigma	0.18†	0.50*	0.06	0.20†	0.27*	0.41*	0.45*	0.46*	0.26*	0.49*
Dietary burden	0.31*	0.46*	0.22*	0.29*	0.36*	0.47*	0.42*	0.42*	0.33*	0.48*
Symptoms	0.42*	0.49*	0.21*	0.33*	0.51*	0.55*	0.54*	0.50*	0.31*	0.48*
Social isolation	0.35*	0.63*	0.28*	0.35*	0.44*	0.61*	0.59*	0.61*	0.44*	0.63*
Worries and concerns	0.30*	0.42*	0.15‡	0.29*	0.37*	0.45*	0.43*	0.40*	0.27*	0.42*

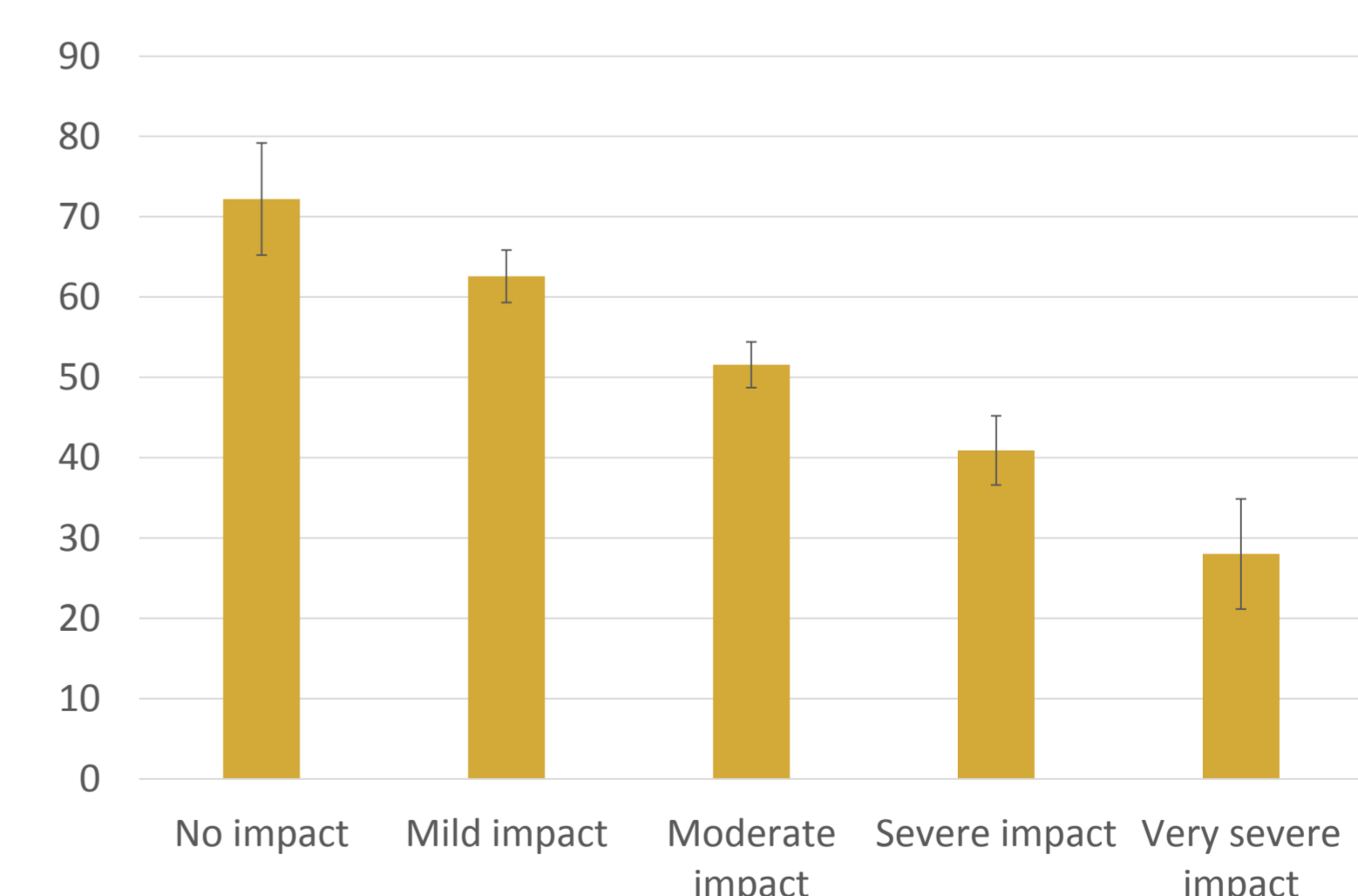
*p<0.001; †p<0.01; ‡p<0.05
SF-36v2 dimensions: Physical Component Summary (PCS); Mental Component Summary (MCS); Physical Functioning (PF); Role-Physical (RP); Bodily Pain (BP); General Health (GH); Vitality (VT); Social Functioning (SF); Role-Emotional (RE); Mental Health (MH).

- In general, correlations between the CDAQ and SF-36v2 were as expected, with dimensions of the CDAQ correlating more strongly with mental health dimensions of the SF-36v2 and the MCS score.
- Correlations between the CDAQ and general health (GH) and vitality (VT) were stronger than expected. However, it is reasonable to expect that poorer coeliac disease-related QOL (e.g. increased dietary burden or symptoms) may have a moderate to strong association with decreased energy levels and a poorer view of one's health.

Known groups validity

- As expected, the mean CDAQ overall index score for males (60.91, SD=16.81, n=93) was 11.73 higher than females (49.18, SD=17.36, n=158), indicating that males report better HRQOL (p<0.001).
- The CDAQ overall index score decreased (i.e. QOL reduced) as the self-reported impact of coeliac disease increased (Graph 1).

Graph 1. Mean CDAQ overall index score by self-reported impact of coeliac disease



Scores range from 0 (worst quality of life) to 100 (best quality of life). Error bars represent 95% confidence interval.

Conclusion

Results show that the CDAQ is a reliable and valid measure for assessing quality of life in adults with coeliac disease. The measure is suitable for use in research studies, including clinical trials, and clinical practice. An assessment of responsiveness to change is currently underway.



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