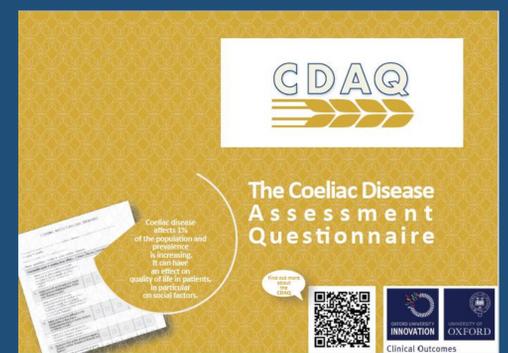


# The Coeliac Disease Assessment Questionnaire (CDAQ): comparison of the paper and electronic versions

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## Aims

Coeliac disease is an auto-immune disorder affecting approximately 1% of the population. Currently the only treatment is a life long gluten-free diet, although research is underway to develop pharmacological treatments.

The Coeliac Disease Assessment Questionnaire (CDAQ) was developed as a paper version and includes five dimensions (stigma, social isolation, symptoms, dietary burden, and worries and concerns). Dimension scores and an overall summary score can be calculated. Electronic surveys are increasingly used in health research, and present some advantages over paper-based surveys such as reduced cost and ease of analysis (McPeake et al 2014). The aims were to develop and test an electronic version of the CDAQ, and to compare the findings to the postal version of the CDAQ.

## Methods

The CDAQ was administered to 1443 members of Coeliac UK, either by a postal survey (n=500) or as an electronic online version (n=943) using Qualtrics Software. Respondents were asked to complete the CDAQ and some demographics and disease-related questions (e.g. time since diagnosis, dietary adherence).

Data were analysed in SPSS version 20. Data analysis aimed to compare the electronic and paper-based versions, using Chi<sup>2</sup> for univariate analysis and regression analysis for multi-variate analysis. Only significant results are reported.

## Results

An overall response rate of 24.9% (n=359) was achieved, with considerable differences between the electronic and paper versions (Table 1). Of those receiving the questionnaire electronically, 63.6% (n=600) opened the email, and 19.8% (n=187) of these clicked through to the survey. The majority (73.3%) of those clicking through to the online survey completed the questionnaire.

- Respondents to the electronic version were more likely to be female (72.1% vs 52.0%, p<0.001) and to be working (full-time, part-time and self-employed) (p=0.02)

**Table 1:** Response rate by mode of administration

Mode	Surveys sent	Surveys returned
Paper	500	223 (44.6%)
Electronic	943	137 (14.5%)
<b>Total</b>	<b>1443</b>	<b>360 (24.9%)</b>

**Table 2:** Internal consistency (Cronbach's alpha) by mode of administration

Dimension	Paper	Electronic
Stigma	0.89	0.87
Dietary burden	0.84	0.86
Symptoms	0.81	0.84
Social isolation	0.87	0.89
Worries and concerns	0.81	0.83

- Internal consistency was good regardless of mode of administration (Table 2)

- Significant differences were found for five items (Graph 1) and for two dimensions (stigma and social isolation) (Table 3)

- Female participants reported significantly worse scores on 26 of the 32 individual CDAQ items, the five dimensions scores and the overall CDAQ score. The significant difference for mode of administration did not remain for stigma and social isolation when controlling for gender.

**Table 3.** Significant differences in CDAQ dimension scores by mode of administration

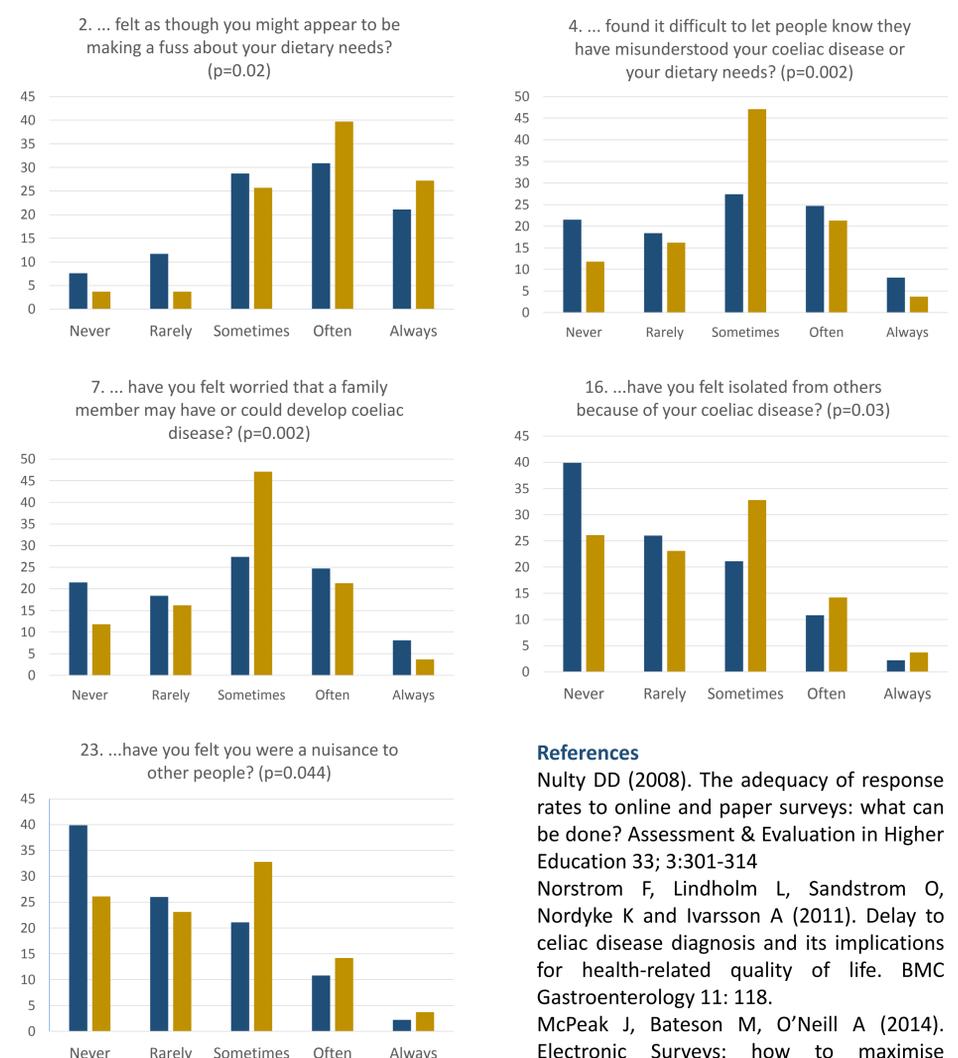
	Paper Mean (SD)	Electronic Mean (SD)	p
Stigma	54.4 (22.7)	48.5 (20.1)	0.013
Social isolation	66.2 (23.7)	60.4 (24.0)	0.027

## Conclusion

The electronic version of the CDAQ seems less acceptable to people with coeliac disease as indicated by the substantially lower response rate. However, this is not unique to the CDAQ with evidence showing lower response rates for electronic versus paper-based questionnaires in different studies (Nulty, 2008).

Differences in scores for individual items and two dimensions were found according to mode of administration. Further differences in scores were found for gender. Previous research (e.g. Norstrom et al 2011) suggests that women with coeliac disease report lower quality of life than men. Hence, it is likely that differences between modes of administration were related to the higher proportion of women responding to the electronic version rather than true differences in the electronic and paper-based versions of the CDAQ. Further research into the acceptability of the electronic CDAQ is underway.

**Graph 1.** Responses (%) to CDAQ items by mode of administration (paper ■ and electronic ■)



## References

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## Licensing

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