

# **A randomised trial comparing response rates between the EuroQol with or without the SF-12.**

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## **Abstract**

We undertook a randomised controlled trial (RCT) of questionnaire length. We found that whilst including the SF-12 in a survey of women aged 70 and over tended to reduce response rates, inclusion of the EuroQol alone had not such effect. Therefore, researchers should be cautious about increasing questionnaire length in studies undertaken within an elderly population; however, the EuroQol is an acceptable instrument for such a population.

## **Introduction**

The relative simplicity and inexpensive administration of postal questionnaires has made them one of the most commonly used instrument for data collection.<sup>1</sup> Nevertheless, poor response rates frequently associated with this survey method could limit the validity of the results.<sup>2,3</sup> Consequently, an important concern when designing postal questionnaires should be the maximisation of response rates and control for information bias. One feature that is commonly thought to influence response rates is questionnaire length. However, there is limited evidence to support this view. For instance a recent review of response rates to patient satisfaction surveys did not find that questionnaire response rate was affected by questionnaire length.<sup>4</sup> Similarly, two trials in the context of health care research which examined the effect of questionnaire length on response rates found no effect of questionnaire length.<sup>3,5</sup> However, non British and non health studies have found strong evidence to support a negative relationship between questionnaire length and response rates.<sup>6,7,8</sup>

In general, surveys on health related topics are expected to achieve better response rates than surveys on more general issues. However, given the importance of the topic, surprisingly few studies in the context of health care have explored the effect that length of questionnaire has on response rate. This issue is increasingly important given that health economic data collection, such as cost and quality of life data, are collected using postal questionnaires alongside clinical data. Many clinicians are resistant to include quality of life and cost questionnaires within their data collection instruments because of the perception that they may lead to poorer response rates. This perception has been supported recently when a randomised trial comparing response rates to a clinical

questionnaire plus the EuroQol with a clinical questionnaire plus the SF-36,<sup>9</sup> showed a modest (5%), but statistically significant reduction in questionnaire response for the longer questionnaire. However, the EuroQol and the SF-36 instruments are not necessarily substitutes for each other rather they can be used in a complementary way. Therefore, we would like to know whether response rates are reduced by sequentially adding more quality of life (QoL) instruments to a questionnaire. Hence, is response rate to a clinical questionnaire affected by adding the EuroQol and other QoL instruments. To our knowledge this issue has not yet been addressed.

In this study we explored the variations in response rate when two different quality of life instruments (EuroQol and SF-12) are attached in a sequential fashion to a clinical questionnaire on osteoporosis risk factors.

## **Methods**

The study was set in the context of a survey of osteoporotic risk factors among women aged 70 years or over, who were living in the Yorkshire area. As well as being asked about fracture risk factors the women were also asked if they would be willing to participate in a randomised controlled trial of hip protectors. Women were however, encouraged to return the questionnaires irrespective of whether they wanted to take part in the trial. We included 352 female patients, aged over 70 years. The GPs provided labels with names and addresses of patients who they thought could answer the questionnaires (i.e. not suffering from dementia) or were not bed or chair bound.

## **Questionnaire**

Four different versions of the questionnaire were designed. The first one consisted of only clinical questions related to osteoporosis risk factors and patients willingness to participate into the study (4 A4 pages). The second type of questionnaire included the EuroQol (without the visual analogue scale) in addition to the clinical questions (5 A4 pages). The third version was comprised by the clinical section, the EuroQol and the original version of the SF-12. Finally, the fourth was the same as the third but used the newest version of the SF-12 (7 A4 pages).

The questionnaires were put into an opaque brown envelope and were alternated and given to a member of the practice staff to be addressed and posted (who did not know about the questionnaire length study). All the patients received a package containing one of the questionnaires, an information letter describing the aim of the study, and a prepaid return envelope. No reminders were sent out. Completed questionnaires were returned to the Centre for Health Economics. Analyses were performed using the Chi squared and t-test as appropriate. Results were considered statistically significant with a p-value of 0.05 or less.

Each patient received a questionnaire between 10 February 1999 and 12 February 1999. The analysis incorporates returned questionnaires until 7 May 1999.

## Results

Three hundred and fifty two questionnaires were sent out in the first instance, 106, 106, 70 and 70 questionnaires type one, two, three and four, respectively. Initial sample size had to be reduced by 5 patients who for different reasons (death, dementia, moved away from the study area), were unable to answer the questionnaire. In the analysis a final sample size of 346 subjects was considered. Table 1 describes the final composition of the questionnaires sent out.

**TABLE 1. Description of total questionnaires sent out**

Questionnaire Distribution				
Q-Type	Sent	Not to be Considered	Total to Be Considered	Received
1	106	2	104	54
2	106	1	105	53
3	70	2	68	27
4	70		70	31
Total	352	5	347	165

**TABLE 2. Analysis of variation among different types of questionnaires with respect to age and health status**

Age				Average Health			
Q-Type	Mean	Std Dev	Cases*	Q-Type	Mean**	Std Dev	Cases*
Short	78.3	6.1	47	Short	2.8	0.80	52
Medium	78.1	6.2	44	Medium	3.0	0.70	52
Long	76.3	11.5	54	Long	2.8	1.00	58
Total	77.5	8.6	145	Total	2.9	0.83	162
t = 0.8045		Sig = 0.4493		t = 1.22		Sig = 0.296	

\* Variations due to missing items.

\*\* Where 2 = fair health, and 3 = good health

Mean age for the study population was 77.5 years, with a standard deviation of 8.6 years. For analysis purposes, and based on the fact that both questionnaires included basically the same items, the information from questionnaires 3 and 4 was pooled together. Having done that the questionnaires were reclassified in three categories short, medium, and long according to its length. A comparison of the three resulting groups with respect to different characteristics of the subjects (age and general health status) revealed that the

respondents to the long questionnaire tended to be younger (although this was not statistically significant). There was no difference in self-reported health status (see table 2).

Table 3 shows the variation in retrieval rate with respect to length of questionnaire. Overall retrieval rate was 48%. The longest questionnaire had a response rate about 10% less than the shorter questionnaires although this was not statistically significant.

**TABLE 3. Interactions between retrieval rate and questionnaire length**

Response Rates					
Short	Medium	Long	Overall	P-Value	CI*
52.00%	51.00%	42.00%	48%	0.10	(-2.5 - 22.7)
Chi-square* = 0.6447					
Odds Ratio** = 1.53    CI = (0.92-2.56)					

\* Comparison between the response rates to short and long questionnaires.

\*\* Odds ratio of long questionnaire compared to short questionnaire retrieval rates

We tested whether length of questionnaire affected responses to items in the clinical questionnaire using  $\chi^2$  test for independence between type of questionnaires and proportion of missing answers (partial response rate) (see table 4). We found no significant relationship between the two variables. This result may support the thesis that the inclusion of quality of life instruments within a clinical questionnaire should not have any effect on individuals willingness to answer the clinical questions which were placed at the start of the questionnaire.

**TABLE 4. Partial nonresponse to clinical questions across questionnaires**

Missing Items to Clinical Questions			
Partial Response	Type of Questionnaire		
	Short	Medium	Long
No	45	42	47
Yes	9	11	11
Total	54	53	58
Chi-square = 0.29482                      Significance = 0.86294			

An analysis of partial non response to EuroQol across questionnaires with respect to the inclusion or exclusion of the SF-12, provided evidence of a possible degree of interaction between this two factors. Surprisingly, significantly lower rates of partial non response to the EuroQol were observed whenever the SF-12 (any version) was included. The results are show on table 5.

**TABLE 5. Partial response to EuroQol-5D when the SF-12 was included**

Partial Response	Missing Items to EuroQol			
	Q-Type		% Total EuroQol Answered	
	Medium	Long	Medium	Long
No	43	56	81.10%	96.60%
Yes	10	2	18.90%	3.40%
Totals	53	58	100.00%	100.00%

Chi-square = 6.82904                      Significance = 0.00897

**Conclusions.**

Our overall response rate in the present study was 48%, comparatively smaller than retrieval rates achieved in other similar studies (62.1%-79%).<sup>3,5,10</sup> However, we were unable to use reminders for our study and this will partially explain our low overall response. Furthermore, an aim of our study was to recruit patients into a clinical trial and those women who would have normally responded to a survey may not have responded if they did not wish to be included in a trial.

The results of our study give some support to the notion that increasing the length of the questionnaire can lead to a reduction in the response rate. Interestingly, however, lengthening the questionnaire did not affect responses to the clinical items which were towards the front of the questionnaire. This might not have been the case had the clinical items been placed towards the rear of the questionnaire. Although the response rate to the "long" questionnaire was somewhat lower than the "medium" questionnaire the overall return rate for the EuroQol was virtually the same. Thus, if a respondent was prepared to return a "long" questionnaire she was likely to complete the EuroQol instrument in the middle of the questionnaire. On the other hand, respondents returning the "medium" questionnaire were more likely not to fully complete the EuroQol. This supports the findings of a similar study undertaken to evaluate various measures likely to increase questionnaire's response rate.<sup>11</sup> In this study the authors also found higher response rates associated to shorter questionnaires. Nonetheless, a comparison of related questionnaire retrieval rates to mean proportions of missing answers, revealed that higher questionnaire response rate were to some extent counteracted by a higher mean proportion of missing items.

Of importance to health economists is that lengthening a clinical questionnaire by the trivial amount required to include the EuroQol has no discernible effect on response rates. Hence, by including the 5 EuroQol items in a questionnaire can provide useful QoL information at no penalty to the overall response rates.

In summary, increasing the length of a questionnaire in this population (i.e. women 70 years and over) may reduce response rates. Further, it may introduce some bias as older women tended to be less likely to return the long questionnaire compared with young women. However, questionnaire length does not seem to affect the quality (i.e. the completeness) of returned questionnaires. Given the paucity of research into the effect of questionnaire length on response rates more trials are required in a range of different populations.

## References

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