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Evaluation of an intervention to improve successful completion of the Mini-AQLQ: comparison of postal and supervised completion

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KEYWORDS
Asthma;
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Summary *Introduction:* Previous postal administration of Mini Asthma-related Quality of Life Questionnaire (Mini-AQLQ) (validated for self-completion under supervision) resulted in 12.7% completion error rate.

Aims: To administer the Mini-AQLQ by post with instructions, and to compare completion errors with our previous study and usable response rate with supervised self-completion.

Method: The Mini-AQLQ, with an instruction sheet, was posted to 96 participants from UK general practice, for completion 1 week before supervised self-completion in the surgery.

Results: 94/96 (98%) postal questionnaires were returned: the error rate of 10.6% was similar to our previous study (postal versus previous: 10/94 versus 23/181: $P = 0.62$). 86/96 (90%) attended for supervised completion with no completion errors (supervised versus postal: 0/86 versus 10/94: $P \leq 0.01$) Overall usable response rates were similar. (supervised versus postal: 86/96 versus 84/96, $P = 0.65$).

Conclusion: Our instruction sheet did not significantly reduce postal completion errors, however the good postal return rate achieved comparable overall usable response rates to supervised administration.

Introduction

Increasing recognition of the importance of focusing on patient's concerns in order to evaluate interventions has led to an expanding literature using quality of life measures [1,2]. The Asthma Quality of Life Questionnaire (AQLQ) of Juniper et al. [3] is widely used as a research tool [2] and the development of a shortened, self-completed version (Mini-AQLQ) [4] has further increased its popularity. More recently, the questionnaire has been investigated for use in routine clinical practice [5]. Although the instrument has been validated for self-completion under supervision there has been increasing interest in administering it by post [6].

The Mini Asthma-related Quality of Life Questionnaire

The Mini-AQLQ is a 15-question instrument validated for supervised self-completion [4]. Questions

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are scored on a scale of 1—7 (where 1 is greatest impairment and 7 is least impairment) and grouped into four domains: symptoms, activity, emotional and environmental. To calculate an overall mean score it is recommended that all 15 questions are completed correctly. Although, when a patient completes the questionnaire on two or more occasions, it may be possible to interpolate one missing or erroneous response, it is usually considered wise to disregard all questionnaires with inadequate responses in order to avoid bias.

Previous experience with postal administration

When we administered the Mini-AQLQ by post during the baseline data collection in a recent randomised controlled trial [6], we observed that of the 181 questionnaires returned 23 had one or more errors that invalidated the response. This completion error rate of 12.7% (95% CI = 8.2—18.5%) compares to 100% usable responses in the original Mini-AQLQ validation study [4].

A total of 31 individual questions were omitted and four had double entries. The most commonly omitted question, unanswered by 12 (6.6%) of respondents was Q15 which asked subjects about the effect of their asthma on 'work-related activities' A number of respondents annotated their questionnaire to explain that they were unable to answer this question as they were 'retired' or 'didn't work', overlooking the explanation below the question suggesting they should reply for 'tasks they have to do on most days' (see Fig. 1 for examples).

Objectives

1. To compare completion error when the Mini-AQLQ is administered by post with an instruction sheet with that observed in our previous study [6].
2. To compare usable response rate when the Mini-AQLQ is administered by post with an instruction sheet with supervised self-completion.

Method

Ethical approval was granted by the East Kent Local Research Ethics Committee. Participants were recruited from Whitstable Medical Practice, a large two-centre practice with 30,000 registered patients, one of the four practices who had participated in the earlier trial.

Development of an instruction sheet

We devised an instruction sheet to include the information normally provided when completing the questionnaire under direct supervision [7]. The sheet was designed to be as 'user-friendly' as possible and included illustrated advice about how to complete the questionnaire, emphasising the importance of answering all the questions. (Fig. 2) We re-formatted the Mini-AQLQ, adding lines between the questions to reduce the possibility of scanning errors and moving the explanation for Q15 to precede the question about 'work-related activities'. All the changes were made with the consent of the copyright holder. Comments from some patients with asthma invited to complete the questionnaire using the instruction sheet during the pilot phase were incorporated into the design.

Recruitment and procedure

We recruited adults with asthma to a study to compare responses to the Mini-AQLQ when administered by post, and subsequently under supervision in the surgery. The only exclusion criteria were inability to

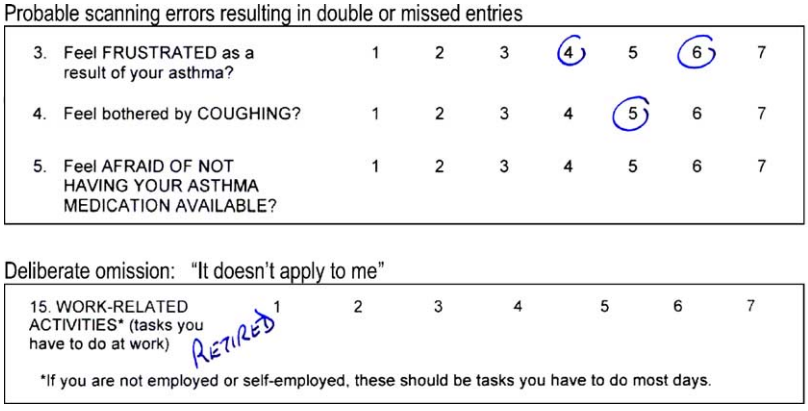

Figure 1 Examples of completion errors.

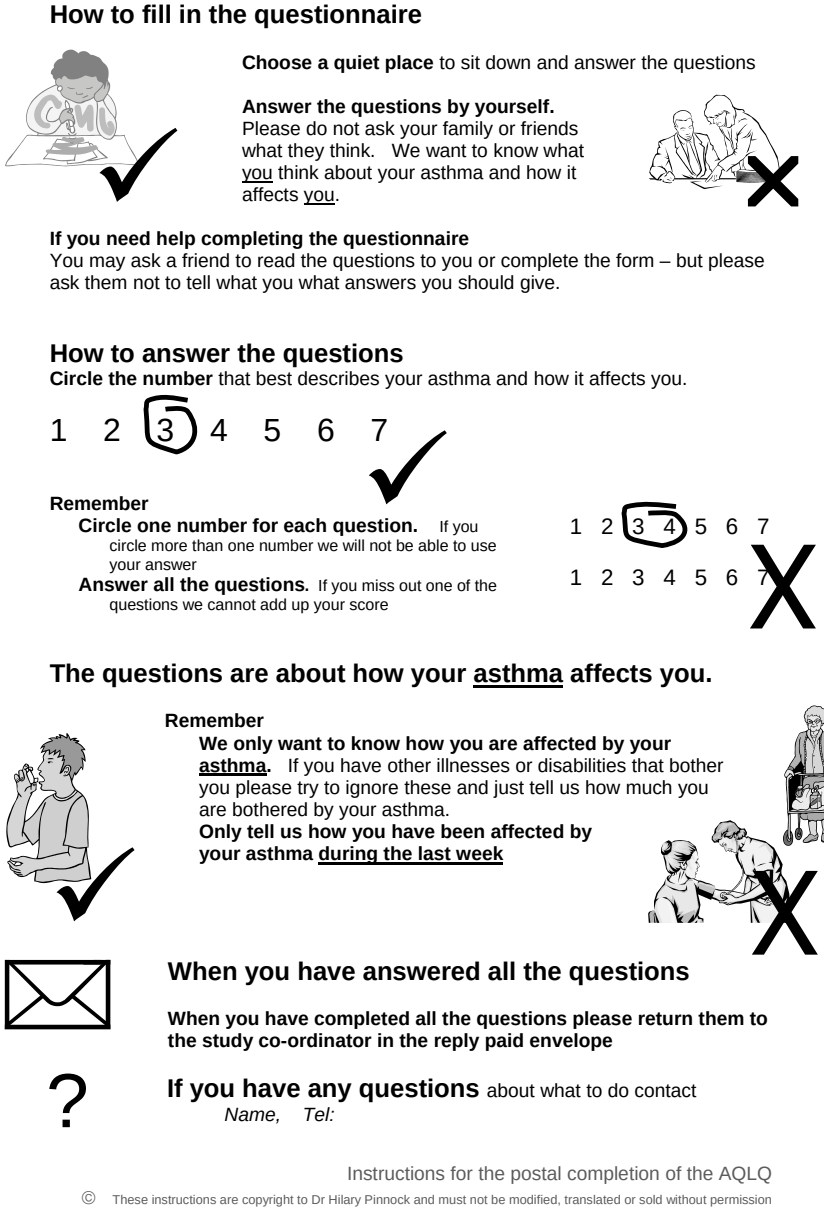

Figure 2 Instruction sheet for the postal completion of the Mini-AQLQ.

complete the questionnaires in English, recent (less than 3 months) asthma diagnosis, or at the discretion of their general practitioner for serious medical or social reasons. No patient had completed the Mini-AQLQ in the previous year. Consenting participants were sent the postal version of the Mini-AQLQ with the instruction sheet and a reply-paid envelope 1 week before their chosen appointment in the surgery to complete the questionnaire under supervision.

Sample size calculations and data analysis

To detect an improvement in accurate completion rate of 12%, from 87 to 99%, with 80% power at the 5% significance level we needed 90 pairs. The χ^2-test was used to compare the rates of successful completion with the Fisher's exact test being used in the event of small numbers.

Results

Ninety-six participants were recruited of whom 66 (69%) were female with a mean age of 58.5 years (S.D. = 15.7). This compares to the demography of the 224 patients included in our earlier trial of whom 130 (58%) were female with a mean age of 56.10 years (S.D. = 17.29).

Table 1 Completion errors for the Mini-AQLQ.

	Previous trial $n = 181$ questionnaires	Current study	
		Postal $n = 94$ questionnaires	Supervised $n = 86$ questionnaires
Unusable questionnaires, *n* (%) (one or more questions missing or erroneous)	23 (12.7%)	10 (10.6%)	0
Specific problems with individual questions	$n = 2715$ questions	$n = 1410$ questions	$n = 1290$ questions
Missing data	31	15	0
Q15 omitted	12	8	0
Second page ignored	1	1	0
Additional answer inserted	2	0	0
Double entries	4	0	0

94/96 (98%) of postal questionnaires were returned. Of the 94 returned, 10 (10.6%) contained one or more missing responses. Eight people omitted one question, one omitted two questions, and one person omitted all four questions on the second page. Eight people omitted Q15. There were no double entries. 86/96 (90%) of the participants attended and completed the Mini-AQLQ under supervision: there were no completion errors. Details of the errors are given in Table 1.

Postal administration versus previous study

There was an improvement in the percentage of patients who returned their questionnaires (postal version versus previous study 94/96 (98%) versus 181/224 (81%) $\chi^2 = 16.28$, $P < 0.001$). The completion error rate for the postal administration with our instruction sheet was not significantly different to our previous study (postal version versus previous study: 10/94 (10.6%) versus 23/181 (12.7%): $\chi^2 = 0.25$, $P = 0.62$). There was no difference in the completion rate of Q15 (postal version versus previous study: 8/94 (8.5%) versus 12/181 (6.6%): $\chi^2 = 0.32$, $P = 0.57$).

Postal administration versus supervised administration

The accuracy of completion of supervised administration was significantly better than postal administration (error rate of supervised version versus postal version: 0/86 (0%) versus 10/94 (10.6%): $P = 0.002$). However, when the non-attendance rate at the supervised sessions and the good response rate to the questionnaire were included the overall percentage of usable responses was similar: supervised versus postal: 86/96 (89.5%) versus 84/96 (87.5%); $\chi^2 = 0.21$, $P = 0.65$.

Discussion

The failure of our instruction sheet (Fig. 2) to reduce the completion errors is disappointing though perhaps not surprising given the notorious difficulty of ensuring compliance with written instructions. It is recognised that in the absence of a trained supervisor to check completion, postal responses have a higher error rate [8] and it seems that our instruction sheet was not able to make a significant impression on this problem. Nevertheless, our instruction sheet may indirectly have helped the good postal return rate.

Limitations of our study

Our sample size was calculated to demonstrate a reduction from the 13% error rate in our previous trial to the <1% expected in a supervised administration. We did not have the power to detect smaller improvements. Our data suggests that an improvement of 2%, from 87 to 89% might have been more realistic. To be sure of demonstrating this magnitude of change, we would have needed to recruit 4242 patients.

Another factor that may have affected our results was that the patients in the two postal cohorts were recruited for different studies and had a slightly different demography. Although the entry criteria were similar, the patients for our randomised trial came from four different practices, only one of which contributed to this study. This is unlikely to have substantially affected completion

errors, but the different context may have influenced the response rate. Patients volunteering to participate in studies are not entirely representative. In our study, they were older and included a higher proportion of women than the eligible population which may reduce generalisability.

Main strengths of study

Our study design ensured that participants returned their postal questionnaire before attending the supervised session. Completion of the postal version was, therefore, always naïve allowing an assessment of the usable response rate that can be achieved with the use of the instruction sheet and re-formatted questionnaire. This represented the worst case scenario for postal administration allowing comparison with the gold standard of supervised self-completion. We considered excluding participants who had completed the Mini-AQLQ in our previous study but were advised by the licence holder (EJ) that prior completion more than one year before would not influence responses, particularly as that administration was not supervised so that patients would not have been 'taught' how to complete the questions. In the event, only 14 patients took part in both studies.

Interpretation of findings in relation to previously published work

The errors observed in both our cohorts were similar to those described in other studies using the AQLQ [9]. The most common error was with question 15 that asks about 'work-related activities' which was still ignored by many non-working respondents who did not think that the question applied to them. The simple strategy of moving the explanation to precede the question appeared to have no effect. Dawson in a study including postal and face-to-face administration of the SF-36 general health questionnaire observed similar problems with older respondents omitting 'work-related' questions [10]. This raises particular issues for the design of questionnaires intended for postal use in a wide age range of patients. More positively, there were no double entries on our re-formatted questionnaires that included lines beneath the questions to aid visual scanning.

Despite the higher error rate, postal administration remains a viable option when attendance rates and response rates are taken into account. Ten percent of our study population failed to attend the supervised session they had arranged, whereas only 2% did not return their postal questionnaire so that the overall number of usable responses achieved was similar in both groups. As the concordance between the results obtained by postal and supervised administration is excellent (data not presented), users may take both factors into account when deciding on an appropriate mode of administration for their needs.

Conclusion

Our instruction sheet did not reduce completion errors by the intended 12%. However, the good return rate for postal administration achieved comparable overall usable response rates to the gold standard of supervised administration.

Conflicts of interest

None declared.

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HP initiated the idea for the study, designed and tested the instruction sheet and led the development of the protocol, securing of funding, study administration, data analysis, interpretation of results and writing of the paper. AS contributed to the development of the protocol, securing of funding and oversaw data analysis, interpretation of results and writing of the paper. EJ advised on the design of the instruction sheet and questionnaire amendments, development of the protocol, data analysis and interpretation of results. All authors reviewed the final manuscript. HP and AS are study guarantors. Toni Bowey undertook the study administration.

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