Is a computer questionnaire of childhood asthma acceptable in general practice?

Sheree Kablea, Richard Henryb, Rob Sanson-Fisherb, Malcolm Irelandc and Jill Cockburna


Objectives. To determine whether a previously-validated touch screen computer program of symptoms and management of childhood asthma is acceptable to parents who accompany their children to consult a GP, and to examine whether any parent characteristics are associated with acceptability.

Methods. Conducted in general practice in Newcastle, NSW, Australia. A cross sectional pen and paper survey was given to parents of children consulting a GP after completing the computer questionnaire on childhood asthma in the waiting room. Measurements were frequencies of Likert scale responses to statements concerning the computer questionnaire, compared with demographic and personal characteristics.

Results. High levels of acceptability of the asthma computer questionnaire were reported by the 198 respondents, with most being willing to do the same program once or twice a year (87%), or to do similar programs on other topics (91%). Most respondents (81%) agreed that the computer program was enjoyable, and very few (8%) would have preferred to answer the asthma questions by pen and paper rather than by computer. Two or more children accompanying the parent was the characteristic most associated with less positive responses.

Conclusions. Overall the high acceptability of this questionnaire suggests that this computerised format is an appropriate method of screening children for asthma and determining their current management. As a large component of underdiagnosis of asthma is lack of reporting to the doctor, this valid and acceptable diagnostic aid has the potential to improve detection of unreported asthma, and also to identify high-risk individuals.

Keywords. Asthma, child, computers, family practice, questionnaires.

Introduction

Advances in information technology have made it increasingly common to collect clinically relevant information from patients outside the face-to-face consultation using computerized questionnaires and checklists. However, there are few reports of their acceptability in primary care, and none concerning child health.

This study aimed to:

(i) determine whether a touch screen computer program of childhood asthma is acceptable in a general practice population; and

(ii) examine whether any parent characteristics were associated with acceptability.

Methods

This was a cross sectional pen and paper survey of a touch screen computer program on childhood asthma, installed in waiting rooms of eleven general practices in Newcastle, Australia. The program comprised 24 questions and assessed both symptoms of asthma and any treatment given, and took an average of 11.4 minutes to complete. The program has been described more fully elsewhere.Parents or guardians were eligible if they had a child between 18 months and 18 years old who was attending a general practice for consultation for any condition (excluding chronic respiratory conditions besides asthma). Parents who agreed completed the computer program and, though children were able to assist, were asked to complete the acceptability survey by themselves. If the program was completed for more
than one child in a family only one survey was given per family.

Acceptability was assessed using ten items with four point Likert scales (strongly agree, agree, disagree, strongly disagree (Table 1). Parent characteristics were tested for associations with agreement for each acceptability parameter using Chi-squared analysis or Fisher’s exact test. For each parameter the characteristics with associations at a P-value of 0.25 were entered into a logistic regression model using the forward stepwise technique to determine adjusted odds ratios (OR).

Results

Two hundred and thirteen parents of consecutive paediatric patients were invited to participate, and 198 completed both the computer program and acceptability survey (93%).

The mean age of children for whom the survey was completed was 8.8 years (SD 4.4), and 54.0% were girls. The mean age of adults was 36.3 years (SD 9.5), and the majority were women (82.0%).

Responses to the ten acceptability items are shown in Table 1. Overall, high levels of acceptability were reported. Although a quarter of respondents reported that some questions were hard to answer, 87% of this group agreed that they would not mind doing the program once or twice a year, 93% would do similar programs and 83% still found it enjoyable.

One third of respondents had their children complete the computer program by themselves (mean age 12.4 years). This group were more likely to report that the questionnaire was too long compared with the adult completion group (27% versus 11%, P = 0.006), but there were no other significant differences.

For the remaining two-thirds, characteristics were analysed for associations with acceptability items. Parents who found the computer program enjoyable were more likely to be aged less than 35 years (OR 8.1, 1.8–37.4 ±95% CI) and have not completed high school (OR 3.0, 1.2–7.7 ±95% CI). Parents who had more than one child under six years old with them were more likely than others to think the program was too long (OR 22.6, 2.4–210.8 95% CI) and more likely to have preferred a pen and paper questionnaire instead of the computer program (OR 9.3, 1.8–47.5 ±95% CI).

Discussion

Acceptability

The main limitations to the generalisability of this study is that adults had to speak English fluently, and there was a moderate to high literacy level in our sample. Thus the high levels of acceptability found cannot be assumed to apply to practices that are more linguistically diverse or in areas with low literacy levels.

Even so, the response rate of 93% gives confidence that the results can be extrapolated to those with English reading levels of sixth grade or above. Given that most respondents enjoyed doing the computer program and would be willing to do similar programs, there appears to be openness among parents to the collection of data in this manner in general practice.

Completion by children

The tendency to report that the computer program took too long when completed by the child may be due to two factors. First, children may actually take longer as they may have lower literacy levels, may not know the answers to some questions, or may have more difficulty recalling some aspects of their history. Second, for parents who are not actively involved it may seem that the program takes longer. Of those who completed the survey themselves, the proportion who reported that the program was too long (11%) is much closer to that found in previous studies of adult questionnaires in other settings which had average completion times of over 15 minutes.3–5

Associations with parent characteristics

Respondents aged 35 or over were less likely to think the computer program was enjoyable. While this group were no more likely to think that computers are difficult, they may not like interacting with computers as much as younger parents.

It is interesting that respondents who had completed high school were less likely to find the program
enjoyable. Those with higher educational levels may be more likely to use computers in their day to day life, and are more likely to own a personal computer, and so a touch-screen computer program may have little novelty value for them.

It is not surprising that parents who had two or more children under six years old with them were more likely to report that the program was too long and they would prefer a pen and paper questionnaire, given the difficulties posed by using a computer in the presence of a small child. When the computer has a touch-screen interface and bright graphics, a curious toddler or preschooler would almost invariably want to take part, which may make the process laborious and lengthen the completion time.

Conclusion
Overall the high acceptability of this questionnaire suggests that this computerized format is an appropriate method of screening children for asthma and determining their current management in general practice. As a large component of underdiagnosis of asthma is lack of reporting to the doctor, this diagnostic aid has the potential to improve detection of unreported asthma, and also to identify high-risk individuals. We are increasingly confident that this approach to childhood asthma management could be adopted more widely in general practice.

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Declaration
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Ethical approval: this study was approved by the University of Newcastle Human Research Ethics Committee.
Conflicts of interest: none.

References