

# Preferences for self-care or professional advice for minor illness: a discrete choice experiment

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## ABSTRACT

### Aim

To determine the relative importance of factors that influence decision making in the management of minor illness, and how people trade between these factors.

### Design of study

Discrete choice experiment.

### Setting

Scottish electoral roll.

### Method

Six hundred and fifty-two responders of a previous national survey were invited to complete a discrete choice experiment questionnaire. This was used to measure relative preferences for managing symptoms of minor illness often associated with analgesic use. Three attributes were identified as important to participants: type of management, availability, and cost of managing symptoms. Trade-offs between these attributes were examined.

### Results

A 57% response rate was achieved (51% valid response rate). People preferred to manage symptoms by self-care and were willing to pay almost £23 to do so. Community pharmacy was the preferred source of advice. Responders preferred less waiting time and paying less money when managing symptoms, and were willing to trade between factors. A less preferred type of management became more attractive when waiting times and cost were reduced.

### Conclusion

Findings suggest that self-care is the preferred method of managing symptoms of minor illness. When developing services to support self-care, policy makers should invest in services that reduce waiting times and incur least cost to users.

### Keywords

discrete choice experiment; minor illness; self care.

## INTRODUCTION

Increasingly, policy makers are advocating the development of services that encourage patients to practise self-care.<sup>1-3</sup> Shared responsibility for health, and regarding self-care as part of the overall provision of health care have been emphasised. This is the case for management of chronic conditions and minor illnesses. Policy supporting self-care is prompted by a need for optimisation of resources. In addition, morbidity statistics for England and Wales suggest that more than 40% of GP consultations are for 'minor' conditions that could be treated without medical advice, or managed without specific treatment.<sup>4</sup> It has been suggested that patients with the necessary skills and resources to manage their health will benefit from greater control over their lives<sup>5</sup> and improved outcomes.<sup>6</sup>

Recent UK Government policy highlights the role of community pharmacies in supporting safe and effective self-care by the public.<sup>7,8</sup> Community pharmacies provide general health advice and specific information about prescription and over-the-counter medicines. The New Community Pharmacy Contract in Scotland<sup>9</sup> enhanced the role of community pharmacies by supporting the introduction of a 'minor ailment service'. This service allows patients who are exempt from prescription charges to receive treatment for self-limiting

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### Box 1. Discrete choice experiment attributes: descriptions and levels.

#### Type of management

- ▶ GP: You could make an appointment at your GP surgery and get professional medical advice in the usual way. You may or may not be given a prescription or advice to purchase treatment.
- ▶ Practice nurse: You could arrange to see the practice nurse at your GP surgery for professional advice/information. You may or may not be given a prescription or advice to purchase treatment.
- ▶ Pharmacy: You could ask for professional advice or information from a pharmacist or from a counter sales assistant at a community pharmacy (local chemist). You may or may not be advised to purchase treatment.
- ▶ Complementary: You could get advice by consulting a professional complementary therapist such as a herbalist, homeopath, aromatherapist, or massage therapist. You may or may not be advised to purchase treatment.
- ▶ NHS 24: You could call and ask for information or advice from a health professional on the 24-hour NHS telephone help line. You may or may not be advised to purchase treatment.
- ▶ Self-care: You could deal with the symptoms by yourself or by asking for advice from friends or family. This could include using an over-the-counter medicine or a home remedy, exercise, or resting. You may also look for advice or extra information, e.g. from books or the internet. In this case, you would NOT consult a health professional directly.
- ▶ Do nothing: You could choose to do nothing about the symptoms, that is, you would not ask anyone for advice or information, and would not change your normal behaviour in any way.

#### Availability

The length of time you would have to wait before you can deal with your symptoms in your preferred way. This may include the time you have to wait for an appointment, travel time, and time taken to receive any treatment.

- ▶ 0 hours
- ▶ 1 hour
- ▶ 5 hours
- ▶ 1 day
- ▶ 2 days
- ▶ 5 days

#### Cost

We want to know how much you value the different options. One way of doing this is to measure how much you would be willing to pay. We want you to think about how much you would be prepared to spend to get your preferred option. This would include all associated costs, such as travel costs and the cost of any treatment (for example, any consultation fee, over-the-counter medicines, or complementary remedies).

- ▶ £2
- ▶ £5
- ▶ £7
- ▶ £15

conditions directly from any pharmacy.<sup>10</sup> A pilot study in Ayrshire and Arran has shown that, while such services can be provided successfully, uptake may be limited with relatively low impact on GP workload.<sup>11</sup> More information is needed to identify how people manage common symptoms associated with self-limiting conditions, and the factors contributing to their decisions to seek help from different health professionals.

Discrete choice experiment is an economic technique which is increasingly used in the healthcare setting. It measures the relative importance that responders place on different characteristics of a service, and the extent to which they 'trade' between these characteristics, that is, how much of one aspect of a service they are prepared to forfeit to have more of another. Discrete choice experiments are based on the premise that a service, intervention, or policy can be described in terms of a number of factors (attributes) that can be set at different levels.

Participants are asked to choose between several options for a service, differing in levels of these attributes. Statistical analyses using regression techniques yield coefficients that describe relative preference (utility) for each attribute. The ratio of coefficients provides information on responders' willingness to trade between attributes. Where a price proxy is included as an attribute, the ratio of the coefficients can be used to estimate willingness to pay for a service, thus providing an indirect monetary measure of benefit.<sup>12</sup>

The increasing use of discrete choice experiments in healthcare settings arises from a recognition that healthcare interventions are valued for more than just health outcomes.<sup>13</sup> Discrete choice experiments have been used successfully to involve the public in establishing preferences for health care.<sup>14-17</sup> This technique was used in the current study to assess preferences for managing symptoms associated with flu-like illness. The sample was drawn from responders to a previous

## How this fits in

Self-care is being promoted to manage symptoms of minor illness for reasons that include optimisation of NHS resources and the therapeutic value associated with empowering patients. This study provides empirical evidence that people prefer self-care when managing flu-like symptoms. Where professional help is required, advice from a community pharmacy is the preferred option.

national survey, the Medicines Study, which surveyed 3000 people in Scotland. Responders to the Medicines Study were randomly selected from the electoral roll, and surveyed on their use of non-prescribed medicines.<sup>18</sup> In that survey, analgesics were found to be the most commonly used non-prescription drugs in Scotland. In the 2 weeks before completing the questionnaire, 37% of the sample had used at least one non-prescribed analgesic.

## METHOD

To inform the discrete choice experiment, semi-structured, qualitative interviews were conducted. A purposive sample was selected from 609 responders to the Medicines Study who had agreed to participate in further research. Ninety-seven people who lived on the Scottish mainland and who had experienced at least one condition associated with analgesic use 2 weeks before the survey, were invited by letter to participate. Of these, 24 people were interviewed about actual responses to symptoms associated with analgesic use, reasons for practising self-care and/or consulting a health professional, and perceptions of self-care.<sup>19</sup> Interviews were carried out between April and June 2004 (full results to be published separately (T Porteous, unpublished data, 2007). Transcripts underwent thematic analysis using the Framework method,<sup>20</sup> from which three attributes were identified as important to people when deciding how to manage their symptoms: type of management, availability, and cost. These attributes were used to develop the discrete choice experiment (Box 1).

The discrete choice experiment design was generated using SAS (version 8.0) statistical software. To make the defined sets of attributes and their levels (profiles) as realistic as possible, constraints were applied where appropriate. For example, although waiting 5 days to see a GP is plausible, waiting 5 days to practise self-care is not. The most efficient design for minimising D-error<sup>21</sup> (the determinant of the inverse of the variance-covariance matrix) consisted of 72 separate choice sets, each comprising two alternative profiles. These 72 choice sets were allocated by SAS into eight separate blocks (nine sets per block), each of which was incorporated into a separate questionnaire (blocked design). Each participant received one of the eight versions randomly. Other than the blocked choice sets, questionnaires were identical in every respect.

Core questions collected descriptive socioeconomic and lifestyle data (questionnaire available from authors). Also included in the

### Box 2. Discrete choice experiment symptom scenario.

Please imagine this situation:

- ▶ You have a headache and a fever, your bones are aching and your nose feels slightly blocked. You are still able to do all the things you usually do but are more tired than usual. The symptoms started to appear 4 days ago, and were slightly worse when you woke up this morning.

questionnaire was a clinical scenario to provide context to the decision-making process (Box 2). The scenario described a set of flu-like symptoms associated with analgesic use. The symptoms described are likely to have been experienced by most people and are frequently managed by self-care. In each choice set, participants were asked to select from three options their preferred choice for managing the symptoms, one of which was a 'do nothing' option (Box 3).

Each version of the questionnaire included two 'warm-up' choice questions, to familiarise responders with the question design, and two consistency tests. The consistency tests were identical to, but not consecutive with, selected choice sets from the block of nine, apart from having one fewer alternative to choose from (known as the 'contraction property test').<sup>22</sup> Responders were deemed to have answered consistently if they selected the same option in the original choice set and the consistency test (if that option was still present). Failure on one consistency test was acceptable, indicating possible random error. Individuals failing both tests were excluded from data analysis.

The sample for the discrete choice experiment comprised 752 responders to the Medicines Study who agreed to be approached for further research and who had not been involved in the interviews.

### Box 3. Example of a choice question

Which option would you choose?

	Option 1	Option 2
Type of management	Self-care	GP
Availability	1 hour	2 days
Cost	£2	£7

Tick one box only:

Option 1       Option 2       Do Nothing

**Table 1. Characteristics of questionnaire responders and national data.**

	Questionnaire responders <i>n</i> = 326 <i>n</i> (%)	National data (Scotland) %
Males	162 (50.2)	49.7 <sup>a</sup>
Females	164 (49.8)	50.3
Age range, years		
18–19	0 (0)	3.3 <sup>a</sup>
20–29	8 (2.5)	15.4
30–39	44 (13.5)	18.5
40–49	83 (25.5)	19.0
50–59	78 (24.0)	16.5
60–69	64 (19.7)	12.8
≥70	48 (14.8)	14.5
Missing/invalid	1	n/a
Marital status		
Single	39 (12.3)	20 <sup>b</sup>
Married/cohabiting	217 (68.2)	62
Divorced/separated	29 (9.1)	8
Widowed	33 (10.4)	10
Missing/invalid ( <i>n</i> )	8	n/a
Smoking		
Current smoker <sup>c</sup>	67 (21.1)	27 <sup>b</sup>
Never smoker <sup>d</sup>	138 (43.5)	73
Former smoker <sup>d</sup>	112 (35.3)	-
Missing/invalid	9	n/a
Alcohol drinker		
Yes	258 (81.1)	
No	60 (18.9)	
Missing/invalid	8	
Income		
Up to £9999	45 (15.0)	
£10 000–19 999	79 (26.2)	
£20 000–29 999	66 (21.9)	
£30 000–39 999	42 (14.0)	
£40 000–49 999	29 (9.6)	
≥£50 000	40 (13.3)	
Missing/invalid	25	
Deprivation category (1,7 = least, most deprived)		
Carstairs Depcat <sup>e</sup> 1	26 (8.0)	6
2	49 (15.1)	14
3	71 (21.8)	22
4	85 (26.2)	25
5	44 (13.5)	15
6	36 (11.1)	11
7	14 (4.3)	7
Missing/invalid	1	n/a
Prescription exemption status		
Exempt	162 (50.0)	
Non-exempt	162 (50.0)	
Missing/invalid	2	

<sup>a</sup>General Register Office Scotland — Population estimates for 2004. <sup>b</sup>Scottish Household Survey 2003–2004. <sup>c</sup>Smoker. <sup>d</sup>Non-smoker. <sup>e</sup>McLoone P, Carstairs scores for Scottish post code sectors from the 2001 census. MRC Social and Public Health Sciences Unit.

One hundred people received a pilot questionnaire by post. Responses from the pilot were used to inform minor changes to the final version. The remaining participants (*n* = 652) received by post one of the eight versions of the blocked design questionnaire: 82 participants received one version from blocks one to four (*n* = 328), and 81 received one version from blocks five to eight (*n* = 324). One reminder was sent 2 weeks after questionnaire distribution to participants from whom a response had not been received. The survey was administered in November 2005.

Data were entered into SPSS (version 13.0). Descriptive data were analysed using frequencies and the  $\chi^2$  test. Discrete choice experiment data were transferred to Stata (version SE 9.2) and analysed by conditional logit regression analysis. Categorical data (for the attribute type of management) were expressed as dummy variables. For analysis, the reference level was 'self-care'. Data from the warm-up and consistency questions were excluded.

Regression coefficients were calculated for all attributes and for the constant in the regression model. Within this model, the constant term estimated the preferences for doing something, rather than doing nothing, combined with preferences for practising self-care, rather than any of the other types of management. Magnitude of the regression coefficients represented the degree of preference for each of the attributes: the greater the coefficient, the more that attribute was preferred. Ratio of coefficients was used to demonstrate how responders traded between attributes. Ratio of the cost coefficient to other coefficients was used to calculate willingness to pay for marginal changes in the corresponding attributes. Utility scores were calculated to illustrate the benefit of different models of care.

## RESULTS

Of the 652 questionnaires posted, 70 were returned undelivered and nine were returned not completed because the recipient was not able to participate, that is, the intended participant was deceased, had dementia, was a resident of a nursing home, or no longer in Scotland). Of the remainder, 326 returned the questionnaire (326/573, 57% corrected response rate). Characteristics of the responders are given in Table 1. Responders were more likely to be older ( $P < 0.001$ ), married or cohabiting ( $P = 0.007$ ), and non-smokers ( $P = 0.02$ ) compared with other national Scottish samples.<sup>23,24</sup> There was no significant difference between the proportion of male and female responders, or the distribution of deprivation groups compared with the national samples.

**Table 2. Results of conditional logit regression analysis.**

Variable	Regression coefficient ( $\beta$ ) (95% CI)	P value	Willingness to pay for self-care
Constant term <sup>a</sup>	1.968 (1.791 to 2.145)	<0.001	£22.62
Type of management (reference level, self-care)			
Pharmacy advice	-0.304 (-0.496 to -0.112)	0.002	£19.13 (£22.62 – £3.49)
GP consultation	-0.473 (-0.687 to -0.259)	<0.001	£17.18 (£22.62 – £5.44)
Practice nurse consultation	-0.923 (-1.128 to -0.718)	<0.001	£12.01 (£22.62 – £10.61)
NHS 24 telephone advice	-1.480 (-1.813 to -1.358)	<0.001	£5.61 (£22.62 – £17.01)
Complementary therapist consultation	-1.585 (-1.673 to -1.287)	<0.001	£4.40 (£22.62 – £18.22)
Availability (time to deal with symptom in days)	-0.321 (-0.372 to -0.271)	<0.001	£3.69 for a 1-day reduction
Cost (£)	-0.087 (-0.099 to -0.074)	<0.001	

<sup>a</sup>Coefficient for the constant is used to estimate the combined preference for doing something to manage symptoms (rather than doing nothing) and preference for the reference level, self-care (and thereafter, willingness to pay).

Of the 326 responders, 31 did not complete the discrete choice experiment and two failed both consistency tests. In total, 293 responses were included in the discrete choice experiment analysis (293/573, 51% valid response rate). Table 2 shows the results of the conditional logit regression. All coefficients were statistically different from zero suggesting that all attributes contributed to responders' preferences. Coefficients for availability and cost attributes were negative, indicating that responders preferred waiting less time and paying less money, thus confirming theoretical validity. All coefficients for 'type of management' were negative, indicating that they were preferred less than the reference level (self-care).

The positive and significant constant term indicates that, assuming the levels for time and cost remain the same, responders preferred to do something about the clinical scenario described, (compared with doing nothing), and self-care was the preferred management option. Pharmacy advice was the next most preferred option, followed by GP consultation, although the difference between the two was not statistically significant ( $P = 0.106$ ). Telephone health advice from NHS 24 (Scotland) and consultation with a complementary therapist were preferred significantly less than any of the other types of management ( $P < 0.001$ ).

An estimate of willingness to pay for self-care was derived from the ratio of the coefficients for the constant and cost. Results suggest that all other things being equal, responders would be willing to pay £22.62 to self-manage the clinical scenario

described (1.968/0.087). This amount includes the value of practising self-care and of doing something in preference to nothing. In comparison, responders were willing to pay £17.18 for GP advice (£22.62 – [0.473/0.087]) and £4.40 for advice from NHS 24 (£22.62 – [1.585/0.087]). Responders were prepared to pay £3.69 to reduce waiting time by 1 day before they could deal with the scenario (0.321/0.087).

Relative preferences for managing the scenario using different models can be estimated from the results. For example, the utility (U) associated with seeing a GP after a wait of four days at a cost of £5 can be calculated as:

$$\begin{aligned}
 U &= \text{constant} + \beta_{\text{GP}} + \beta_{\text{days}} + \beta_{\text{cost}} \\
 U &= 1.968 + (-0.473) + 4(-0.321) + 5(-0.087) \\
 U &= -0.224
 \end{aligned}$$

The negative sign on the utility score implies that responders would prefer to do nothing rather than use this model. An alternative may be to see a practice nurse after a wait of 5 hours at a cost of £5. The associated utility score for this model is 0.543 and the positive value suggests that this option would be preferred to doing nothing. This indicates that although seeing a GP was preferred to seeing a practice nurse (all other things being equal), if the wait was too long, seeing a practice nurse became the preferred option for this scenario.

## DISCUSSION

### Summary of main findings

Self-care was the preferred method of managing

this common clinical scenario. In most cases, self-care is likely to be the course of action recommended by healthcare professionals; therefore, responders seemed to favour the most appropriate management. It is not surprising that responders generally preferred self-care over other types of management, given that many symptoms of minor illness occurring in the community are managed without healthcare intervention.<sup>25</sup> Findings suggest that when people opt for professional health advice, they prefer to seek community pharmacy advice for the symptom scenario presented here. Results indicated that people prefer to wait less time and pay less money to manage symptoms, both of which are addressed by the 'minor ailment service' provided for in the the New Community Pharmacy Contract in Scotland<sup>9</sup> and a locally-commissioned option in the new English contract.<sup>26</sup> Services other than pharmacies and GPs were given less preference. In particular, NHS 24 had a relatively poor utility score. The reasons for this cannot be identified from the data but may include lack of experience of NHS 24 among the responders, or perceived inappropriateness for the given symptoms. Alternatively, adverse media reports around the time that the questionnaire was administered may have influenced responses.<sup>27</sup>

#### **Study strengths and limitations of the study**

This is the first report of a discrete choice experiment used to investigate decision making in minor illness. Although only one scenario was examined in this study, the results demonstrate the value of discrete choice experiments in comparing the relative importance of factors that influence people's decision making when managing their health. Useful information has been provided, not only about what attributes of services people prefer when managing minor illness, but also about how people trade between those attributes. This information can be used to inform development of future services for supporting self-care.

The value responders placed on self-care, as estimated by calculations of willingness to pay, was £22.62. The discrete choice experiment cannot confirm that the public will actually pay such sums to practise self-care, as the technique requires responders to make hypothetical rather than actual choices. However, people may be willing to do so, given the existence of a market for purchasing medicines that were only obtainable by prescription until recently. Many products have switched from prescription-only status to being available over-the-counter, such as simvastatin, hyoscine patches, omeprazole, and nicotine replacement products. Such products are bought

by the public, even though they are relatively expensive compared with prescription charges.

Response rates to discrete choice experiments vary depending on factors such as method of administration and sample source.<sup>14</sup> Self-completed postal surveys of the general population tend to attract lower responses than those administered face-to-face with specific target groups. The 57% response in this study was reasonable, although comparison with other national statistics suggests that older people, non-smokers, and married people were over-represented in the sample. The current findings should be interpreted in the light of these imbalances.

It is possible that factors other than the attributes described in the discrete choice experiment may have influenced responders' preferences, for example, how they were feeling at the time. Other limitations of discrete choice experiments have been previously discussed.<sup>14</sup>

#### **Implications for policy and future research**

The findings suggest that people prefer to self-manage self-limiting illness, and that when they need to seek professional help they are willing to use some alternatives to traditional general practice services, such as community pharmacists. However, they also suggest that recent government policies aimed at reducing waiting times to see a GP<sup>28</sup> may discourage some patients from practising self-care. People seem to be less willing to access other alternative services, such as practice nurses and telephone advice provided by NHS 24. This suggests that the proposed benefits of new policies to support self-care may not be completely felt without developing services in a way that takes peoples' preferences into account. How individuals respond to clinical scenarios depends on diverse factors such as the nature of symptoms, perceived seriousness and severity, and available treatments.<sup>29</sup> Behaviour may vary across different groups of people. Future research should seek to determine whether similar patterns are found for a variety of clinical scenarios, and to investigate the reasons for patients having different preferences.

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#### **Ethics committee**

The sample for the original 'Medicines Study' was randomly selected from the electoral roll and participants in the discrete choice experiment were self-selected. A personal communication with Professor Patricia Peattie, Chair of MREC for Scotland, advised that no ethical approval was required

## Competing interests

The authors have stated that there are none

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