

TITLE Self-care behaviour for minor symptoms: can Andersen's Behavioral Model of Health Services Use help us to understand it?

ABSTRACT

Background: Increasing emphasis on shared responsibility for health and diminishing available resources make it important to understand people's decisions when they experience symptoms, especially their decisions about use of health services. A better understanding of this decision-making process will inform the development of health services that can meet the needs and preferences of health service users most effectively.

Objective: To explore whether Andersen's Behavioral Model of Health Services Use can aid understanding of self-care behaviour and inform development of interventions to promote self-care for minor illness.

Method: Qualitative interviews were conducted with 24 Scottish participants about their experience and management of minor symptoms normally associated with analgesic use. Synthesised data from the interviews were mapped onto the Behavioral Model.

Findings: All factors identified as influencing decisions about how to manage the symptoms discussed, mapped onto at least one domain of Andersen's model. Individual characteristics including beliefs, need factors and available resources were associated with health behaviour, including self-care. Outcomes such as perceived health status and consumer satisfaction from previous experience of managing symptoms also appeared to feed back into health behaviour.

Conclusion: The Behavioral Model seems relevant to self-care as well as formal health services. Additional work is needed to explore applicability of the Behavioral Model to different types of symptoms, different modalities of self-care and in countries with different healthcare systems. Future quantitative studies should establish the relative importance of factors influencing the actions people take to manage minor symptoms, to inform future interventions aimed at optimising self-care behaviour.

KEYWORDS

self-care; minor symptoms; Andersen's Behavioral Model

INTRODUCTION

Health systems place an increasing emphasis on shared responsibility for health, shifting the balance from professional-led to self-care for both chronic conditions and minor illnesses¹⁻⁴. This is expected to improve outcomes, increase patient empowerment and lead to lower health service utilisation³. Most previous research in this area has focussed on interventions to support self-care of chronic illness, rather than minor ailments⁵⁻⁸. In the United Kingdom (UK), workload for general practitioners (GPs) increases yearly⁹ and a significant proportion of consultations involve symptoms or problems described as ‘minor’¹⁰⁻¹⁴. There is an assumption that many of these could be managed by self-care, thus freeing up GP time for more serious cases³.

Promoting self-care (with or without health professional support) requires a good understanding of what actions people take when experiencing symptoms, and how and when they decide to seek help from professionals (often referred to as ‘illness behaviour’¹⁵). Two prevalent theories of illness behaviour are the Health Belief Model^{16, 17} and the Common Sense Model of Self-Regulation of Health and Illness^{18, 19}. Both seek to explain individuals’ response to symptoms through understanding cognitions (such as representations of symptoms and perceptions of seriousness). However, response to symptoms is also influenced by wider organisational factors such as accessibility of health systems^{20, 21}.

Andersen’s Behavioral Model of Health Services Use^{22, 23} (‘the Behavioral Model’) seeks to explain health service use by considering features of both the users and the health system (such as health policy and financing). The most recent version (*Figure 1*²³) evolved from the original 1960s model in response to research findings and health service developments. It was developed in the context of formal health services; most studies applying the Behavioral Model have investigated use of such services. In empirical studies, variables from the model are measured quantitatively and analysed using regression techniques to assess how well it explains variability in health service use²². A smaller number of studies have used the model to explore the use of informal services, including self-care²⁴⁻²⁸. However, additional work is needed to validate the Behavioral Model in the context of self-care.

An interview study was conducted to inform health service developments to improve access to support for self-care of minor illness from pharmacists. In that study, we defined self-care

as “*Response to symptoms other than direct consultation with a doctor or using a specifically-prescribed medicine. Responses might include changes in lifestyle, consulting healthcare professionals other than doctors, using over-the-counter medicines, seeking advice from friends and family, using home remedies or doing nothing*”, a modified version of Dean’s definition²⁹. A descriptive report of the interviews is available elsewhere³⁰. The aim of the work reported in this paper was to use the interview data to explore whether the Behavioral Model can explain the actions people take when managing symptoms of minor illness and inform development of interventions to promote self-care for minor illness.

METHOD

The interview study

The sampling frame was 609 respondents to a previous survey on use of non-prescribed analgesics in Scotland³¹, who had agreed to be contacted about further research. All had experienced symptoms of pain in the two weeks prior to the original survey, and were stratified according to how they had responded to symptoms: used an over-the-counter (OTC) analgesic (n=272); used a prescription analgesic (n=99); used both a prescription and OTC analgesic (n=38); or used no analgesic (n=200). Twenty-five individuals were randomly selected from each stratum, ensuring adequate representation of different ages (18 ≤ age ≤ 50 years, n=47), sex (male, n=34), education (O-grade^a or better, n=51) and eligibility for free prescriptions (exempt from paying prescription fees, n=50). To minimise travel costs, three island-based individuals were excluded. The remaining 97 individuals were sent an invitation to take part in a face-to-face interview, an information sheet and a reply-paid envelope. Those agreeing were contacted to arrange a time and date for the interview, held in their own home or an alternative location of their choice.

An interview topic guide was drafted, piloted on three members of the public and revised prior to use; it was also modified iteratively as interviewing progressed to account for emerging issues. Topics in this guide were developed to reflect the aims of the interviews, namely, to explore how people managed symptoms and which factors influenced their decision-making. To provide context for the interviews, people were asked to describe how

^a Basic, subject-based, educational qualification at Scottish secondary schools (now obsolete)

they had managed minor symptoms associated with analgesic use (e.g. headache, backache, joint pain, cold/flu symptoms). Interviewees were asked about their experience of recent symptoms, and reasons for adopting particular management strategies were explored, particularly, experiences of and opinions about self-care. Interviews, conducted by TP between April and June 2004, were tape-recorded and transcribed verbatim. Written consent was obtained immediately prior to starting the interviews.

Data were entered into NVivo (version 2.0.161) to assist in data management and analysis. Thematic analysis was facilitated by the 'Framework approach', a matrix based method of ordering data³². Themes and sub-themes were derived from the interview data, informed by the relevant literature, whilst maintaining the coherence of the individual accounts through the matrix. Three early interviews were independently coded and discussed (TP, SW, CB) to derive an agreed coding framework. One author (TP) coded and analysed all remaining interviews. Thematic analysis of the synthesised data from the Framework matrix was used to identify and summarise facilitators, barriers, cues and attitudes to self-care. We took a realist stance on the data produced in interviews; we saw them as accounts that reflect respondents' views and experiences whilst also being produced in the context of the interview. For this reason we always refer to our data as reports or accounts of views and experiences produced in the interview. The accounts may either reflect respondents' views at other times, or what actually happened during the events they recount.

Following preliminary analysis of the data, a number of behavioural models were considered for their applicability to self-care behaviour including the Health Belief Model^{16, 17} and the Common Sense Model of Self-Regulation of Health and Illness^{18, 19}. Early indications, however, suggested that issues such as access and convenience were important in self-care behaviour. These are explicit in Andersen's Behavioral Model but less well defined in other models. We therefore sought to establish whether the Behavioral Model could be used to explain self-care behaviour by mapping the summary descriptors from the thematic analysis onto Andersen's Behavioral Model of Health Service Use^{22, 23}.

Following enquiries to both the Grampian Local Research Ethics Committee and the Multi-centre Research Ethics Committee for Scotland, we were advised that no formal ethics approval was required for this study. The sample for the original "Medicines Study"³¹ was drawn from the electoral roll, no NHS resources were being used and interviewees were all

self-selected. At time of conducting the interviews (2004), no formal mechanism for providing ethical approval for non-NHS research existed at the University of Aberdeen. However, the study was conducted in accordance with principles laid out in the University's extant policy on research ethics and governance.

Mapping factors that influence self-care behaviour onto the Behavioral Model

Synthesised data from the thematic analysis (summarised facilitators, barriers, cues and attitudes to self-care) were mapped to the relevant components in three of the four domains of the Behavioral Model.

'Individual characteristics': The Behavioral Model proposes that some people are predisposed to use health services more than others. 'Predisposing' factors, including demographic factors (such as age) and social factors (such as education), explain some of the variation in health service use. Our sample was relatively small, selected for maximum variation (in terms of analgesic use and demographic characteristics)³³, so any association between self-care behaviour and these factors could not be quantitatively explored in our study. Other Individual characteristics that may influence health behaviour include those proposed by Bradley *et al* who found that expanding the beliefs component of Andersen's model to include the psychosocial factors 'attitudes', 'knowledge', 'social norms' and 'perceived control', contributed positively to explaining health behaviour³⁴. These factors are included in the most recent version of the Behavioral Model under 'Beliefs'²³. Andersen also notes that genetic factors might incline individuals to use health services²².

Organisational and financial 'Enabling' factors, viewed from the perspective of the individual, are represented in 'Individual characteristics'. We considered these together and regrouped them into community and personal resources.

Andersen proposes that "*some need must be defined for [health service] use to actually take place*"²². In previous studies using the Behavioral Model, 'Need' factors have been the most powerful predictors of health service use²⁸. As a potential predictor of self-care it seems reasonable to assume that, while a degree of need must exist to prompt action, the level required to stimulate self-care is likely to be lower than for consulting a GP. Factors relating to 'Perceived need' were mapped onto the model, but 'Evaluated need' ("*professional*

judgment about people's health status and the need for medical care"²²) was not assessed in this study.

'Health behaviour': This domain describes the actions people take to manage their health and includes the components "personal health practices" and "use of personal health services". The component "process of medical care" was not systematically assessed in our study; it refers to "*the behaviour of providers interacting with patients in the delivery of medical care*"²³ e.g. patient counselling, test ordering, prescriptions.

'Outcomes': Outcomes of previous experiences of health behaviour and health service use can influence subsequent behaviour, perhaps through modifications of individual characteristics such as attitudes to services, knowledge of services and need factors²². Such factors identified in our study were mapped to "consumer satisfaction" and "perceived health status" in the model. Evaluated health i.e. health status as evaluated by health professionals, was not assessed in this study.

'Contextual characteristics': These "*are measured at some aggregate rather than individual level and include health organization and provider-related factors and community characteristics*"²³. Our study design meant that we were unable to collect data about 'Contextual characteristics' so this domain was not populated.

FINDINGS

Response

Five invitation letters were returned undelivered. Responses were received from 52 of the remaining 92 invitees (57%); 28 agreed to be interviewed but two were excluded because of significant mental health problems. Of the 26 appointments made, two interviewees did not attend. The remaining 24 participants were interviewed at their home (n=21), their workplace (n=2) or at a local hotel (n=1), all located within nine of Scotland's 11 mainland Health Boards.

Half the interviewees were aged below 60 years, two thirds were female, 63% were educated to at least O-grade and 58% were exempt from paying prescription fees (Table 1). All four strata of analgesic use were represented in the interview group.

Output of mapping exercise

Output from the mapping exercise is described below with supporting illustrative quotations from the interview transcripts in *italics*. Figure 2 illustrates how the influencing factors we identified mapped onto the Behavioral Model.

A. Individual characteristics

a) Predisposing characteristics - Beliefs

In our study, people spoke about ‘beliefs’ that had influenced their decision to practise (or not practise) self-care; they made statements about their general approach to managing symptoms and illness to justify the kind of response they usually make. We coded these as ‘Beliefs’ and used the sub-headings suggested by Bradley *et al* to further organise them.

Attitudes: In response to direct questions about their own health behaviours, people talked about general attitudes to managing illness including attitudes to self-care, health professionals, lay advice and treatments. Both positive and negative attitudes were expressed to each way of managing symptoms, sometimes by the same respondent (depending on the circumstances); see Box 1 for examples.

Knowledge: People talked about how existing knowledge of symptoms, treatments and professional advice, influenced their decisions about whether or not to self-care. Knowledge was often gained from previous experience and informed management of subsequent symptoms. People who reported a lack of knowledge or understanding of their symptoms were less likely to self-care. Others spoke of their knowledge of the role and capabilities of different professionals and how that influenced whether or not they would use health services. For example, some described a perception that their GP would be unable (or in some cases unwilling), to help manage particular symptoms (e.g. back pain). Another source of knowledge about self-care was from external sources, such as the media, where new

treatments or remedies are discussed. When asked why she chose a particular remedy, Mrs DN said: *Just read about it [in the newspaper] and I asked for the wee booklet on it and I thought, well I'll try it.*

Social norms: Many interviewees portrayed themselves as personally accountable for their own health and responsible users of NHS resources who would not consult a doctor unless really necessary. When asked about his reasons for not consulting a doctor, Mr EH said: *I would have this - probably this attitude of, we shouldn't waste NHS money.* One woman (Mrs PL) perceived that being overweight was contributing to her joint pain: *I've been trying to lose weight. I was aware that there were issues in doctors' surgeries about um you know, "if people aren't going to look after themselves and it's got to come out of our budget, we're going to choose somebody for some further ongoing treatment that, you know.....who does look after themselves".* The idea that her symptoms were exacerbated by something that was her own *'fault'* led this woman to self-care for symptoms in preference to consulting her GP.

Perceived control: Beliefs about personal capability to self-care and the degree of control over one's own health were apparent. For some people, self-care was their first response to almost any symptom and they felt a sense of achievement if they were able to manage without medical intervention. For others, use of health services was more likely if managing the symptom was perceived as too difficult without the support of their doctor or if they perceived a susceptibility to certain symptoms. Mrs NN regularly experienced a chesty cough which (she believed) always required antibiotics from her doctor; she therefore never considered self-care.

Beliefs that a family history predisposes individuals to a particular illness, even if there is no good scientific evidence of a genetic link, may prompt particular health behaviours. Mrs EE disclosed how she had consulted her GP about stomach pains; she wondered *if I've got an ulcer, because my Dad had one.*

b) Enabling characteristics

Community resources: A number of factors that people said influenced their decision to self-care could be linked to community resources including geography (e.g. proximity to health services), time (e.g. waiting times for appointments with doctors) and factors around

availability of information (e.g. from pharmacies, alternative therapists, internet). In some cases, convenience seemed to be the main driver behind the decision to self-care. When asked about her preferences for self-care or medical advice, Ms LW said: *I try to buy to save me to go....goin' to the doctor. When I was workin' it was a well nigh impossibility, because you had either to get time off your work to go for the last appointment [at the GP surgery] because they were closed before you were finished working. So that if the chemist could give me something I would tend to ask there.*

Personal resources: Some people stated that they could not (financially) afford alternatives to consulting a doctor. Advice and/or support from friends or relatives were resources used by many when deciding how to manage symptoms. For Mr DN, a consultation with a homeopath had been his wife's idea: *Even if I was slightly doubtful I wouldn't want to say to her "I am not interested, I am not going to try that"..... she is concerned for my wellbeing obviously, and I'm thinking "well that's fine", you know, "I should honour that concern by doing what she wants me to do".*

c) Need characteristics

A number of factors related to an individual's perceived need appeared to influence decisions about symptom management.

Perceived need: Perceptions about seriousness, severity, familiarity, persistence and level of debilitation were discussed as influencing the decision to self-care. Mrs EE, when asked why she didn't consult a doctor about a symptom, said: *It's not really that bad.....until I'm in much more discomfort, there's really very little the doctor will do.* On the other hand Mrs CE changed from self-care to GP consultation when her symptom *was just getting worse, and it was holding me back more.* Unsupported self-care was often less popular amongst those who had significant co-morbidities or perceived a need for more information. Mr LT, who reported having had significant health problems in the past, was asked about the disadvantages of self-care: *Well you might be [doing] the wrong thing for a kick-off. You might be taking the wrong pills and all that. But if I was going to try and look after myself I'd ask advice either [from] a doctor or a pharmacist.*

B. Health behaviour

Our interviewees reported using a number of ‘practical’ strategies to manage self-limiting symptoms, including use of ‘allopathic’ (orthodox) medicines (both prescribed and non-prescribed), use of alternative therapies, and self-care (“personal health practices” in the model). A wide range of non-medication self-care practices were described (Table 2). When people felt that they needed extra help or advice to manage symptoms, this was most frequently obtained from four sources: a doctor (GP, specialist), another health professional (pharmacist, nurse, physiotherapist, alternative practitioner), lay people (friends, family, colleagues, neighbours) and the media (internet, encyclopaedias, television, radio, books, newspapers, magazines, advertisements).

C. Outcomes

Consumer satisfaction: Perceived attitudes of healthcare professionals towards interviewees, and vice-versa, were cited as reasons for seeking alternative ways of managing symptoms (including self-care). Mrs DN was unhappy with the way she was treated by her own doctor, so to explain why she sometimes used self-care she said: *I just felt sometimes well... the doctors, unless it was a right serious thing, the doctors don't..... they don't you know it's as if you're wasting their time. You know what I mean? I just wasn't too happy.* Conversely, Mrs AE was very satisfied with her GP practice and cited this as a reason for why she never seriously considered practising self-care: *I've never given it any thought. I'm just very happy to be able to consult the medics down the way.*

Perceived health status: Health status, as perceived by individuals following (direct or indirect) experience of successful or unsuccessful treatment of earlier episodes of illness could influence future use of self-care. Mr DL recalled successfully self-managing an episode of illness: *I just followed the same routes, what I thought the same symptoms was as what I had years ago.* When asked if a particular painkiller had been recommended to her, Mrs PH said: *Could have been...[but] my husband, up till about five years ago has always suffered from migraines so I knew quite a lot about pain killers. I mean just from his experience trying one thing after another.*

DISCUSSION

These interview-derived data about self-care of minor symptoms appeared to map well onto Andersen's Behavioral Model. All factors identified from the interviews as influencing decisions about how to manage self-limiting symptoms, mapped onto at least one domain in Andersen's model. While we could not consider the organisational context of the behaviour (because all interviewees used the same health system), we identified other features in people's accounts which suggested that the Behavioral Model could be a useful framework for understanding and developing interventions to change (promote), self-care behaviour.

Strengths and limitations of the study

To our knowledge, this is the first UK study examining the usefulness of the Behavioral Model for explaining self-care behaviour, and one of only a few worldwide; most previous studies using the Behavioral Model have focused on the use of formal healthcare, rather than informal healthcare or self-care. Our results suggest that the domains defined by the Behavioral Model are common to both formal and self-care, although we cannot say whether the degree of influence of specific factors in these domains is the same for different types of care³⁵.

Whereas the current study was based in the UK, the Behavioral Model has evolved through years of accumulating data, mostly from the United States. Whilst there are likely to be some differences in health behaviours arising from different health systems³⁶, other factors from the model influencing decisions about symptom management and health service use (particularly for minor symptoms) are likely to be universal. Our study suggests that the Behavioral Model is relevant to researching self-care behaviour in either setting.

Compared to collecting data by self-completed questionnaire, the qualitative study design allowed a more in-depth exploration of the decision-making processes that occur when people experience symptoms of minor illness. The interviewer was able to define key terms (e.g. self-care), reducing the potential for ambiguity, and the data collected referred to actual (rather than hypothetical) experiences thus enhancing validity. However, some interviewees described symptom experiences that had occurred several weeks or months previously and were reconstructing their own experiences. This was consistent with the 'realist' philosophical stance taken, but these retrospective accounts may have introduced a 'moral' dimension,

whereby interviewees portray themselves as rational and legitimate users to justify their actions³⁷.

Although data saturation appeared to have been reached (i.e. no new themes emerged in the later interviews) the preponderance of females and older people in the sample may mean that the full range of factors influencing decision-making in men and younger people may not have been captured.

Our study design meant that some domains and components in the model were not assessed ('Contextual characteristics', 'evaluated need', 'process of medical care' and 'evaluated health'). Further work is needed to establish whether these unmeasured components are of relevance to self-care behaviour. For example, an important influence in 'Contextual characteristics' is the health system. Our study took place in Scotland where the National Health Service (NHS) provides almost all formal healthcare. The near universality of the NHS and the fact that healthcare is usually free at the point of contact, may mean that this domain is less important in predicting health service use in the UK than in other countries with different models of healthcare provision e.g. through health insurance. Additionally, given that we were exploring the relevance of Andersen's model to self-care (which is not explicitly part of the health system), these contextual characteristics are likely to be of less relevance for the current exercise.

Another area not investigated here was the influence on decision-making of temporal variation in people's circumstances and 'state of mind'. It has been suggested elsewhere that the way someone feels at the time of making the decision to perform specific health behaviour, or important concurrent events, are likely to influence decisions taken³⁵. This warrants further exploration; longitudinal studies collecting data from the same participants at different times could allow insights into this issue.

Implications for future applications of Andersen's Behavioral Model

Andersen noted that not all of the model's components can be modified easily; demographic, social structure and need characteristics have low mutability²². Other components such as health beliefs (including knowledge, perceived control and social norms) and enabling factors (such as personal and community resources) are likely to be more amenable to change by

external interventions. When developing interventions to promote and improve support for self-care, we need to know which factors will have most impact and target these. Limited resources may mean that only some factors can be addressed, so future interventions should focus on those mutable factors where most difference might be made. The introduction of services such as the Minor Ailment Service and the Chronic Medication Service in community pharmacies means that pharmacists are expected to engage more with patients. Such encounters could provide opportunities for pharmacists to deliver interventions to support self-care, specifically targeted at modifying the patient and provider characteristics that are most likely to lead to successful self-care.

We found that the Behavioral Model captures all the factors that people in our study mentioned when asked about how they managed minor symptoms. However, quantitative studies are needed to establish the relative importance of these factors in predicting self-care behaviour. We also need research to ascertain whether other factors influence self-care behaviour, particularly components in the model that we did not collect information about, or that did not emerge spontaneously in the interviews.

The power of the Behavioral Model to quantitatively predict self-care behaviour in any given population will depend on how fully and accurately factors influencing decision-making are captured. Previously the predictive power of the Behavioral Model has been relatively modest²⁸. This suggests that other factors, not included in the model, may be influencing healthcare utilisation. Alternatively, poorly conceptualised measures might not have fully quantified the influence of any given factor. Whilst measurement of some factors is likely to be straightforward (for example, demographics), measurement of others is not. Bradley *et al* point out that validated methods for measuring psychosocial factors are needed, as well as procedures for multistage statistical modelling, before the model can be empirically tested³⁴. Future studies should develop and test practicable measures with optimal sensitivity and specificity.

Conclusion

The qualitative approach used here to identify factors that influence health-seeking behaviour contributes to emerging understanding about why people choose to manage symptoms in particular ways. Future work should explore whether decisions made about self-care vary for

different types of symptoms, different modalities of self-care and in countries with different systems. Empirical studies are required to test which factors have greatest influence on self-care behaviour, to identify where best to apply interventions to optimise self-care behaviours, and what techniques are most likely to effect such change.

Acknowledgements

We thank all participants who gave freely of their time to take part in these interviews.

Source of funding

The study was funded by the Chief Scientist Office of the Scottish Government as part of a Research Training Fellowship awarded to TP.

Conflict of interest

None.

REFERENCES

1. Department of Health. The NHS Plan. A Plan for Investment. A Plan for Reform. London: The Stationery Office; 2000.
2. Scottish Executive Health Department. Delivering for Health. Edinburgh: Scottish Executive; 2005.
3. Department of Health. Self care - A real choice. Self care support - a practical option. London: Department of Health; 2005.
4. Wanless D. Securing our Future Health: Taking a Long-term View. London: HM Treasury; 2002.
5. Warsi A, Wang PS, LaValley MP, Avorn J, Solomon DH. Self-management education programs in chronic disease: A systematic review and methodological critique of the literature. *Arch Intern Med* 2004;164(15):1641-9.
6. Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. Self-management approaches for people with chronic conditions: A review. *Patient Educ Couns* 2002;48(2):177-87.
7. Chodosh J, Morton SC, Mojica W, Maglione M, Suttorp MJ, Hilton L, et al. Meta-analysis: Chronic disease self-management programs for older adults. *Ann Intern Med* 2005;143(6):427,438-432.
8. Bodenheimer T, Lorig K, Holman H, Grumbach K. Patient self-management of chronic disease in primary care. *J Am Med Assoc* 2002;288(19):2469-75.
9. Hippisley-Cox J, Vinogradova Y. Trends in Consultation Rates in General Practice 1995-2008: Analysis of the QResearch® Database.

<https://catalogue.ic.nhs.uk/publications/primary-care/general-practice/tren-cons-rate-gene-prac-95-09/tren-cons-rate-gene-prac-95-09-95-08-rep.pdf>: NHS Information Centre for Health and Social Care; 2009.

10. Banks I. Self care of minor ailments: a survey of consumer and healthcare professional beliefs and behaviour. *SelfCare* 2010;1:1-13.

11. Hassell K, Whittington Z, Cantrill J, Bates F, Rogers A, Noyce P. Managing demand: Transfer of self-limiting conditions from general practice to community pharmacies. *British Medical Journal* 2001;323:146-7.

12. McCormick A, Fleming D, Charlton J. Morbidity statistics from General Practice. Fourth national study, 1991-1992. London: HMSO; 1995.

13. Whittington Z, Hassell K, Cantrill J, Noyce P. Care at the chemist; a question of access. University of Manchester: Royal Pharmaceutical Society of Great Britain; 2001.

14. Proprietary Association of Great Britain. Unlocking self-care. The Annual Review of the PAGB. ; 2008.

15. Mechanic D. Sociological dimensions of illness behavior. *Social Science & Medicine* 1995; 41(9):1207-16.

16. Rosenstock IM. Why people use health services. *Milbank Mem Fund Q* 1966;44(3):Suppl:94-127.

17. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the Health Belief Model. *Health Educ Q* 1988;15(2):175-83.

18. Leventhal H, Meyer D, Nerenz D. The common sense representation of illness danger. In: Rachman S, editor. *Contributions to Medical Psychology* New York: Pergamon Press; 1980. p. 7-30.
19. Leventhal H., Brissette I., Leventhal EA. The common-sense model of self-regulation of health and illness. In: Cameron LD. LH, editor. *The Self-Regulation of Health and Illness Behaviour*. London: Routledge; 2003. p. 42-65.
20. Dixon-Woods M, Cavers D, Agarwal S, Annandale E, Arthur A, Harvey J, et al. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. *BMC Medical Research Methodology* 2006;6.
21. Gulliford M, Public Health and Health Services Research Group. Access to Health Care. Report of a scoping exercise for the National Co-ordinating Centre for NHS Service Delivery and Organisation R & D. Kings College London: Department of Public Health Sciences; 2001.
22. Andersen RM. Revisiting the Behavioral Model and access to medical care: Does it matter?. *J Health Soc Behav* 1995; Mar.;36(1):1-10.
23. Andersen RM. National health surveys and the behavioral model of health services use. *Med Care* 2008;46(7):647-53.
24. Linden K, Jormanainen V, Swigonski NL, Pietilä K. Self-medication among Finnish young men in the beginning of common military service. *Pharmacoepidemiology & Drug Safety* 2005;14(3):193-201.

25. Fillenbaum GG, Hanlon JT, Corder EH, Ziqubu-Page T, Wall Jr. WE, Brock D. Prescription and nonprescription drug use among Black and White community- residing elderly. *Am J Pub Health* 1993;83(11):1577-82.
26. Kart CS, Engler CA. Self-health care among the elderly: A test of the health-behavior model. *Res Aging* 1995;17(4):434-58.
27. Norburn JEK, Bernard SL, Konrad TR, Woomert A, DeFries GH, Kalsbeek WD, et al. Self-care and assistance from others in coping with functional status limitations among a national sample of older adults. *Journals of Gerontology - Series B Psychological Sciences & Social Sciences* 1995;50(2).
28. McEachreon S, Salmoni A, Pong R, Garg R, Viverais-Dresler G. Anticipated choices among self-, informal, and formal care by older Canadians. *J Health Psychol* 2000;5(4):457-72.
29. Dean K. Lay care in illness. *Soc Sci Med* 1986;22(2):275-84.
30. Porteous T. How do people choose between self-care, supported self-care and GP consultation in minor illness?[dissertation]. University of Aberdeen; 2007.
31. Porteous T, Bond C, Hannaford P, Sinclair H. How and why are non-prescription analgesics used in Scotland?. *Family Practice* 2005;22:78-85.
32. Ritchie J, Lewis J. *Qualitative research practice. A guide for social science students and researchers*. 1st ed. London: SAGE Publications Ltd; 2003.
33. Patton MQ. *Qualitative research and evaluation methods*. 3rd ed. Thousand Oaks, CA: Sage; 2002.

34. Bradley EH, McGraw SA, Curry L, Buckser A, King KL, Kasl SV, et al. Expanding the Andersen model: The role of psychosocial factors in long-term care use. *Health Services Research* 2002;37(5):1221-42.
35. Lorenc A, Ilan-Clarke Y, Robinson N, Blair M. How parents choose to use CAM: A systematic review of theoretical models. *BMC Complementary and Alternative Medicine* 2009;9.
36. Vingilis E, Wade T, Seeley J. Predictors of adolescent health care utilization. *J Adolesc* 2007;30(5):773-800.
37. Bury M. Illness narratives: Fact or fiction?. *Sociology of Health and Illness* 2001;23(3):263-85.

Table 1 Characteristics of interviewees

		% (n)
Sex	Male	33 (8)
	Female	67 (16)
Age Range	30-39	13 (3)
	40-49	8 (2)
	50-59	29 (7)
	60-69	33 (8)
	70+	17 (4)
Education	Less than O-grade	21 (5)
	O-grade or better	63 (15)
	Unclear	17 (4)
Exemption status from prescription charges	Exempt from charges	58 (14)
	Pays prescription charges	42 (10)
Analgesic use in the 2 weeks prior to completing the Medicines Study ³¹	No analgesic used	17 (4)
	OTC analgesic only used	21 (5)
	Prescription analgesic only used	25 (6)
	Both prescription and OTC analgesic used	38 (9)

Table 2 Self-care practices reported by interviewees

Exercise	Walking Gardening Gym work Dancing Weight lifting Sports
Rest and relaxation	Resting (non-specific) Bed rest Relaxation classes Avoidance of aggravating factors (e.g. heavy lifting, sitting at desk, sport)
Dietary changes	Improved general diet (“healthy eating”) Exclusion diets Weight-loss diets Specific foods (e.g. hot lemon/honey drinks for colds, sweets for sore throats, fried food for hangovers, vitamin/mineral supplements)
Musculoskeletal practices	Warm baths Hot water bottle Hot/cold compresses Alexander technique Massage
Other	TENS machine Application of counter-irritant
Do nothing	“Wait and see” “Put up with it”

Box 1 Attitudes to different ways of managing symptoms

- **Self-care**

- Mrs AE (to justify **not** using self-care): *You know I think it would be awful just to start dabbling*

- Mrs AE (to explain why she **did** use self-care): *I read you know, if there's something comes out..... the [newspaper]'s done a series lately on foods that help [arthritis] and uh, that's where I picked up the idea of the magnesium which I've just begun taking.*

- Mrs BK (to justify using self-care): *It makes you responsible for your own health. And I've got my children doing the exact same thing.*

- **Doctors**

Mrs EH (to justify **not** consulting a GP): *I think GPs are under a lot of pressure*

- **Pharmacists**

Mr DN (when asked why he relied on the GP instead of asking a pharmacist for advice): *I have never asked the advice of a pharmacist, never. I don't think I ever would actually*

- **Lay advice**

Mr DE (when asked why he did not discuss his symptoms with family and friends): *I prefer expert help thank you*

- **Medicines**

Mr EH (when asked why he prefers not to take analgesics): *the effect [of analgesics] might become less efficient if you take too often and too much.*