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# Frail elderly patients in primary care—their medication knowledge and beliefs about prescribed medicines

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## Abstract

**Purpose** The aim of this study was to describe elderly patients' knowledge about and attitudes towards their medicines in Swedish primary care.

**Methods** Thirty-four patients aged 65 years and above with multiple illnesses were included. Medication knowledge was assessed with a questionnaire measuring knowledge about indication and possible adverse effects for each medicine. Attitudes were investigated with the Beliefs about Medicines Questionnaire.

**Results** The indication of at least 75% of their medicines was known to 71% of the patients. Patients with polypharmacy and multi-dose drug distribution respectively had significantly less knowledge. Eighty-four percent had no knowledge about possible adverse effects. For 93% of the patients, the benefits of the medication outweighed the costs (concerns). No correlation was found between attitudes and knowledge.

**Conclusions** The knowledge about indication was higher than previously seen, but the knowledge about possible adverse effects was poor. The patients had strong beliefs in the benefits of their medication.

**Keywords** Medication knowledge · Beliefs about medicines · BMQ · Elderly · Primary care · Polypharmacy

## Introduction

Adherence to prescribed medication is important for effective medical therapy. Not taking one's medicines in a prescribed way can lead to less therapeutic effect or overdose-related problems. That in turn can result in further medication, unnecessary investigations or hospitalisation. Elderly patients are more sensitive to non-compliant behaviour since their illnesses more often require a multiple and long-term therapy. They are also more vulnerable as a consequence of diminished plasticity due to their advanced age. According to a study by Okuno et al., 25% of the elderly aged 80 years and over do not take their medicines as prescribed [1]. Age is the strongest predictor of a higher number of medicines. Most scientists think that more medicines lead to poorer compliance [2–4]. However there are studies that have contradicted this connection [1, 5] or even found the opposite [6].

Patients', and especially older patients', knowledge about their medicines is generally poor [1, 3, 4, 6–8]. A Danish study on 75 year old people at home showed that only 60% knew the indication for their treatment and as few as 6% could report potential risks, side effects, or interactions [3]. However, among general practise patients in New Zealand, the percentage of correct answers regarding indication, dose and mode of action was between 79 and 87% [8]. In a study by Herzman et al., the patients wanted to have more information about their medication [4], and a good communication about prescribed medication has been shown to lower all types of errors related to

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taking medicines [2]. According to Granås and Bates, older patients however sometimes seem to want to know less about their medication and illnesses than do younger patients [7].

To achieve good compliance, it is necessary that the patient is motivated in taking his/her medicines. Patients must think that they are susceptible to the illness, that they actually suffer from the illness and that the medication can relieve symptoms [5, 9]. In a study by Horne and Weinmann, 89% of the patients considered that the prescribed medication was necessary for maintaining health [5]. Using the “Beliefs about Medicines Questionnaire” (please see “Methods” section), it has been shown that higher necessity scores correlated with higher reported adherence and higher concerns correlated with lower reported adherence [10]. Horne also found that attitude towards medication is a more reliable predictor of adherence than clinical and sociodemographic factors. More than one-third of the patients felt worried about side effects and long-term effects of their drugs, a proportion also found by Granås and Bates [7]. Despite these concerns about side effects, not many could account for the most common side effects of their medicines.

Since compliance is significantly related to patients’ knowledge of and attitudes towards medication [1, 3, 5, 6, 9–11], it is necessary to receive more insight into this aspect. Hence, the aim of the present study was to describe these variables among fragile elderly patients with multiple illnesses. Elderly patients’ knowledge of and attitudes towards their medication have not previously been analysed in Swedish primary care.

## Materials and methods

### Study population

The study was performed from September 2006 through October 2007 as a part of a larger project, which is designed to evaluate the use of Case Manager as a care model for elderly with multiple illnesses. The study was performed in Eslöv, a town in southern Sweden with 30,000 inhabitants, which is, according to Swedish standards, a medium-sized municipality with both rural and urban areas. The patients who were included were aged 65 years and above, had a need for help with at least two activities of daily living, had been admitted to hospital at least two times or had at least four contacts with outpatient or primary care during the last 12 months, were able to communicate verbally and had no cognitive impairments. It should be stressed that these inclusion criteria imply that the studied patients were extremely frail and mostly aged 80 or older.

### Methods

Patients’ knowledge about their medicines was assessed with a questionnaire developed for this study. After the first few patients, the questionnaire was tested for usefulness and comprehension and was slightly modified accordingly. For each medicine, the patient’s knowledge about indication and possible adverse effects or risks was investigated. The knowledge about indication was graded as “good knowledge” if the patient could tell the purpose of the prescription, as “knowledge with written information” if the patient had access to, and actively used, short written notes on his or her prescription and as “no knowledge” otherwise. For correlations involving knowledge, we did the calculation both with these three groups separated and with the union of the groups “good knowledge” and “knowledge with written information”, since patients who use written lists know where to find the information in daily life and therefore can be regarded as having knowledge. In written information, there is generally no information about adverse effects. Therefore knowledge about possible adverse effects was graded as “yes” or “no”.

Patients’ beliefs about their medicines were assessed using the Beliefs about Medicines Questionnaire (BMQ), which is a validated scale developed by R. Horne, England [5, 12]. It has been translated into Swedish, with the back-translation accepted by the original author of the questionnaire. A pilot study was performed which concluded that the questions had good face validity [13]. The BMQ comprises two five-item scales assessing patients’ beliefs about the *necessity* of prescribed medication for controlling their illnesses and their *concerns* about the potential adverse consequences of taking it. For each statement, the patient indicates the degree of agreement on a five-point scale, ranging from strongly disagree (1) to strongly agree (5). Scores from each scale are summed and thus, total scores range from 5 to 25 for the necessity scale and concern scale respectively. The difference between necessity score and concern score can range from -20 to 20 and indicates whether the patient considers that the benefits of the medication (necessity beliefs) outweigh the costs (concerns).

Data were collected in the patients’ homes by one of two researchers. A follow-up about the variables related to the patient’s medication was made a few weeks after the start of the study, confirming concordance between the two researchers.

The investigations of attitudes and knowledge were made in the main project (Case Manager). Many other variables were thus assessed, i.e. age, educational level and medical care consumption. One variable graded the patients’ feelings about being sufficiently informed about prescribed medicines or not from “not at all” to “very well”. We also noted whether the patients received help with

medicine distribution, i.e. if their drugs are machine dispensed into one unit for each dose occasion [14]. This made it possible to evaluate prospective correlations with medication knowledge and beliefs about medicines.

**Statistical methods**

Power calculation was made for the main study. Since this is a descriptive study, it was not necessary to perform such a calculation separately here. The exact Pearson chi-square test, as implemented in SPSS 14.0 statistical package, was used for the correlation analyses.

**Ethics**

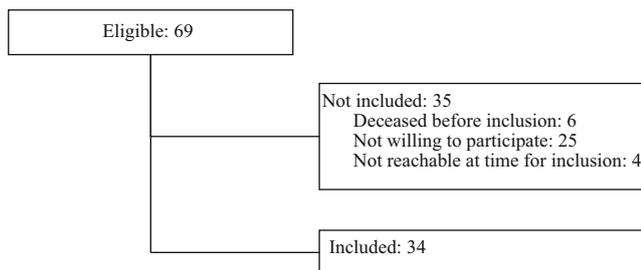
The ethical committee at Lund University approved the project no. 342/2006.

**Results**

In all 34 patients were included (Fig. 1).

The number who answered a particular question ranged from 27 to 34. The characteristics of included patients are presented in Table 1. Only six patients (18%) had fewer than five medicines. All the included patients but two had one or more medicines for heart or blood pressure. Thirteen of 31 (42%) had one or two psychotropic drugs, including sleeping drugs. Other frequent kinds of medicines were drugs for obstructive lung, diabetes drugs and gastrointestinal drugs. Of the 18 (58%) patients who received help in distributing their drugs, most were helped by the nursing caregivers but some by a relative and six (19%) had multi-dose drug dispensing (Table 1).

The indication for at least 75% of their medicines was known to 22 (71%) of the patients. Eight of those were aided by their medicine list. There were no differences between patients of different gender, educational level, nor between groups that felt differently about having been given sufficient information about their medication. However, patients with multi-dose drug dispensing had significantly less knowledge than patients without distribution (*P*-value 0.046; Table 2).



**Fig. 1** Study flow-chart

**Table 1** Characteristics of included elderly patients

	Men (n=14)	Women (n=20)	Total (n=34)
Median age (range)	86 (76–95)	81.5 (72–94)	34
Median number of medicines (range)	7 (2–10)	8 (3–17)	31
Multi-dose drug distribution	3	3	31

Patients without polypharmacy (i.e. those taking fewer than five medicines) had significantly better knowledge than patients with more medications (*P*-value 0.011; Table 2).

Twenty-six (84%) patients did not have any knowledge about possible adverse effects for any of their prescribed medicine. A few were aware of them for one or two medicines and only one patient was able to report risks or adverse effects for all his/her medicines, a total number of 14.

For the vast majority of the sample, 26 (93%), the difference between necessity score and concern score was positive, indicating strong beliefs that the benefits of the medication outweighed the costs. The difference was a negative value for only two persons. For all five necessity statements, the majority (ranging from 57 to 93%) reported agreement. Strongest agreement (93% of the sample) was found for the statement “My medicines protect me from becoming worse.” Seventy-nine percent agreed with the statement “My health, at present, depends on my medicines.” However, over one-third (39%) agreed that “My medicines are a mystery to me.” The concerns about long-term effects of the medicines and dependency were lower, 14%.

The differences between necessity score and concern score were divided into quartiles. No differences were found between the quartile groups in terms of gender, educational level or polypharmacy. There were no differences in beliefs about medicines between patients with or without multi-dose drug dispensing. In addition there were no differences between patient groups that felt differently about having been sufficiently informed about their medication. Furthermore, we could not find any relation between beliefs about medicines

**Table 2** Correlation between medication knowledge and multi-dose drug distribution/polypharmacy

	Multi-dose drug distribution		Polypharmacy	
	Yes	No	Yes	No
No knowledge	3	5	9	0
Good knowledge	0	13	8	6
Good knowledge with written information	3	5	8	0
Total	6	23	25	6

**Table 3** Correlation between beliefs about medicines and medication knowledge

		Medication knowledge <sup>a</sup>	
		No	Good
BMQ difference	First and second quartile	4	9
	Third and fourth quartile	4	10
P-value		0.901	

BMQ Beliefs about Medicines Questionnaire

<sup>a</sup> Includes knowledge with and without written information

and medication knowledge (Table 3). This was seen both when three separate groups of knowledge were analysed, as well as when medication knowledge included those with and without written information.

## Discussion

This study shows that 71% of the included elderly primary-care patients can account for the indication of at least 75% of their medicines. This is higher than was seen in the previously mentioned Danish study [3], where only 60% of the subjects knew the purpose of their medication. This is intriguing since the patients in our study were both older and frailer. One reason for this might be a recent Swedish law stressing that every patient should be given full information and actively participate in decisions on his or her medical care.

This study does not examine where the patients got their knowledge about indication and possible side effects, but it can be supposed that they were primarily informed by the prescribers and from package leaflets. The elderly probably do not use the internet as a source of information as much as younger patients do. Patients with multi-dose drug dispensing have less medication knowledge than patients without. This may indicate that the appropriate group of patients receives multi-dose drug dispensing. Without distribution their medication adherence probably would have been lower. It is also of advantage that the prescriber always has a correct medication list at hand. However, multi-dose drug dispensing is also associated with some problems, such as errors when patients are transferred between primary and secondary care [15]. Likewise, patients with polypharmacy had less knowledge than patients with fewer medicines. This appears likely, since it should be easier to keep 2–4 medicines in mind than 5–17, and can be seen as further reason to limit polypharmacy. Similar to the finding in the Danish study, the knowledge about possible adverse effects of or risks with the medication was generally poor. In our study this was seen

although potent drugs, such as warfarin, were prescribed. This should be seen as a problem, since it is more difficult to report relevant adverse effects to the prescriber if you do not know which you should pay attention to.

As many as 39% considered their medicines “a mystery”, indicating that more weight should be given to information when medicines are prescribed. This is despite the fact that the patients’ feelings about being sufficiently informed or not about prescribed medicines were not related to medication knowledge. This might be due to the kind of information that is given to the patient. The prescriber should put more emphasis on ensuring that the patient has actually understood the information. There must be a two-way communication between the doctor and the patient.

Our study also reveals strong beliefs in the benefits of medication. For the vast majority of patients, this belief outweighed their concerns. We found less concern about the medication than was earlier found by Horne et al. [5]. However, the studies examined different patient groups. Possibly our elderly group is less demanding than younger patients, giving different BMQ scores. No relation was found between the patients’ beliefs in medicines and their medication knowledge. However, this study may be underpowered to confirm such a correlation.

This study has some limitations. The number of included patients is small. Many of the asked persons did not want to be a part of the study since they felt too weak or ill. The material does not include a description of the subjects that were not included. Notably not every included patient could answer all questions, mostly because of weakness. A few patients stayed non-permanently at a nursing home, and during that time they did not handle their medication by themselves. Furthermore, the study did not examine elderly patients in general, but did study patients with special needs, who are weaker and also have more medicines than average. They are therefore more vulnerable, making compliance even more important.

Since attitudes and knowledge are correlated with patients’ compliance, interventions should be made to improve attitudes towards and knowledge about medicines. Future studies should focus on how doctors convey information on the medicine that is being prescribed and on patients’ understanding. It might also be of interest to examine the relation between the use of some drugs, i.e. psychotropic drugs, and knowledge. However, the present study was underpowered to find such a relation.

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**Conflict of interest statement** There are no conflicts of interest.

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