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# PUBLIC EDUCATION IN DRUG USE: IS THERE ANY INTEREST AND NEED FOR IT AMONG THE POPULATION?

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**Abstract.** Background. One problem in public health is the misuse of drugs. This study examines where exactly people obtain drug information. Also people's knowledge about the drugs, how many different drugs are stored in the medicine-chests of Estonian households, and how the drugs are used.

Methods. A self-compiled questionnaire was used in this cross-sectional study. The questionnaires were mailed in October 1997 to 1040 Estonian-speaking persons and a reminder letter was sent in November 1997. In total, 530 returned and completed questionnaires could be used for data analysis.

Results. Eight point eight percent of inhabitants had 1–5 different drugs at home, 27.7% of respondents had 6–10 different drugs and 20.3% of respondents had 10–15 different drugs. Eight point five percent of inhabitants had more than 20 different drugs at home. The drugs that were most frequently found in the medicine-chest were analgesics and anti-inflammatory drugs for respiratory disorders and antibiotics. A significant proportion (26.6%) of the sample would use the once-prescribed drugs again without consulting with a doctor. Even though doctors and pharmacists were the main source of drug information, mass media and colleagues contributed significantly. The vast majority of the respondents expressed their wish to be better informed about various aspects of drug use.

Conclusion. People are very interested in several aspects of using medicines, in particular concerning a selection of drugs with similar effects; the action of the active substance of medicine, interactions with other medicines, possible side effects of drugs, and the effects of drugs on working ability and driving.

The drugs used in medicine are frequently misused. This has been identified as one of the growing problems in public health. Public information and education in drug use have been mentioned in the WHO Drug Action Programme as a key element in national drug policies in order to promote rational drug use (WHO 1988). The overall aim of public education in drug use is to provide the individuals and communities with information and to foster skills and confidence, which will enable them to use medicines in an appropriate, safe and judicious way. Drug use

should be seen within the overall context of a society, community, family and individual. Public education in drugs should be based on the best available scientific information on drugs, their efficacy and side effects (WHO 1996).

Public education should encourage an informed decision-making by individuals, families and communities on the use of drugs and non-drug solutions. The health care reforms in the Central and Eastern Europe, including Estonia, are changing the paternalistic relationship between a doctor and a patient towards an increase in the patient's own responsibility, emphasising the need for better informed patients. At variance with previous practice, the over-the-counter (OTC) drugs can be publicly advertised in Estonia since January 1998.

The main source of most reliable drug information to the consumer is the standard leaflet in the drug package, which consists of short listings of the drugs' pharmacological characteristics and of the known potential main side effects. The language is highly technical, and the text makes no effort to educate the patient to use the product correctly.

Morris and Groft (1982) reviewed a number of US studies of the topic and found that on average, 77% of the population would like to have written information about their medication. Smith and Stephenson (1984) and McMahon et al (1987) have shown that between 74% and 90% of patients feel that the information given by health care professionals about the prescribed drugs is inadequate. However, a minority of patients actually request information (McMahon et al 1987), the verbal advice they are given is often forgotten (Ley 1979) and the medical terminology may be confusing (Boyle 1970). Patients with certain chronic diseases, e.g., a cardiovascular disease, often require several drugs, and to use them safely and effectively they require certain basic information (Herman et al 1978, Ridout et al. 1986).

A Food and Drug Administration consumer survey indicated that pharmacists provided verbal information to only 37 percent of the respondents and even fewer (15 percent) received written information (Chilton Research Inc. 1982). During an in-home interview, nearly 75 percent of 1233 medication users reported an urgent need for more information about the safety, efficacy and proper home use of prescription medications (Washington 1984). Similarly, a large telephone survey reported that physicians and pharmacists do not consistently or thoroughly inform consumers about side effects, adverse reactions or storage requirements (Broadcasting System, 1983).

Previously, the Pharmacy Customer Survey (PCS) (Stobbelaar 1996) was conducted in the Baltic countries in 1995. Data were collected from pharmacy customers, by way of face-to-face interviews in Lithuania and Latvia, while in Estonia a questionnaire was given to pharmacy customers (n = 208) who returned them to the investigators. The survey focused on two target groups, the so-called "heavy users" of pharmacy services: people older than 55 years of age and young mothers aged between 25 and 35 years. The pharmacy customers were asked what they knew about the medicine they had just purchased. Most people reported that they did not know enough about their medication and next time should enquire

more thoroughly. In general, patients felt well informed about the dose, the frequency and period of administration, and the storage conditions. Patients felt poorly informed about the need of special diet, or the influence of the drug on driving ability; they also wished to know better what happens if one forgets to take the medicine. In 26% of the analysed cases there was no information leaflet enclosed. No information was obtained whether the leaflet was in an appropriate language and understandable to the customer. In Estonia, a methodologically similar survey in 1996, which addressed other aspects of pharmacy customer satisfaction, revealed that 65% of respondents felt not informed about cheaper alternative drugs available (Soonberg 1997).

A few other main problem issues associated with drug use are, e.g. the use of unsafe and inefficient drugs or the use of drugs for indications that could be handled by non-drug alternatives (which increases risks on a person's health and causes needless expenditures), inappropriate use of antibiotics and other anti-infection drugs (which results in drug resistance, contributing to higher morbidity and mortality), drug and prescription hoarding (under these circumstances people share medicines or use leftovers from previous illness), and polypharmacy or the use of multiple drugs (which increases the risks of adverse reactions, including drug interactions) (Soonberg 1997, Irwin et al. 1995, Ahkee et al. 1996). Studies addressing the quantitative aspects of these dangers among the population are rare, and these issues have not been addressed in Estonia previously. One noticeable health problem in Estonia is, however, the very high incidence of multi-drug resistant tuberculosis, a major public health concern, which has been attributed to excessive inappropriate use of antibiotics. Initial resistance of the disease agent to one or more of the antibiotics tested was 28.2 % and 9.0 % were initially multi-drug resistant (i.e. resistant to at least isoniazid and rifampicin) (Kruuner et al. 1998).

The aim of the present investigation was to study the knowledge of the general population about medicines and to find out what kind of information they think is lacking.

## Methods

A self-compiled mailed questionnaire was used in this cross-sectional study. The questionnaire consisted of 46 multiple choice and 3 open questions.

As previous research in drug use has rarely employed direct questioning of the general population, and no such study had been carried out in the Baltic countries, a preliminary survey to test our original questionnaire was carried out in March 1997. The first version of the questionnaire was sent to 200 inhabitants of the Tartu city and 200 to the inhabitants of the Tartu county (starting from the age of 18 years) who were selected by randomised choice from the inhabitants' register. On the basis of the returned filled-in questionnaires (45%, age of respondents 19–89 years), a second version of the questionnaire was developed with presumably better understandability and less ambiguities. The corrected version of the questionnaire was mailed to 1040 Estonian-speaking subjects (n calculated as

suggested by Reynolds) (Reynolds 1977) randomly selected from the inhabitants register (age 18–65 years) of the population of the whole Estonia. The questionnaires were mailed in October 1997 and a reminder letter was sent in November 1997. Statistical analysis was carried out with SAS package. Comparisons between groups were made with $\chi^2$ statistics.

## Results

### *Description of respondents*

Thirty-two questionnaires were returned unfilled because of wrong address or because the subject was not in condition to fill in the questionnaire. After excluding these, the percent of those who responded was 51% (42% for men and 58% for women). The average age of respondents was 41.2 years for males and 42.2 years for females. Most of the respondents (75.5%) were in employment, pensioners, students, domestic, unemployed subjects formed 10.4, 5.5, 4.9 and 3.7% of the sample, respectively.

### *Domestic medicine-chest*

Data about how many different drugs the subjects reported to have in their medicine-chests are shown in Table 1.

*Table 1*

| | |
|---|---|
| 1–5 | 8.8 |
| 5–10 | 30.6 |
| 10–15 | 19.1 |
| 15–20 | 7.7 |
| More than 20 | 4.8% |

Seventy four point two percent of respondents answered that they are used to buying OTC medicines thought to be needed for first aid. Many people had leftovers from previous illness (72.3%). Because drug leftovers from previous illness can make up a large proportion of the medicine-chest, we could say that people store more drugs than is required. Drugs received from friends were present in the medicine-chests of 10.1% of respondents. The drugs that were most frequently found in the medicine-chest were: analgesics (painkillers) and anti-inflammatory drugs (49 different preparations), drugs for respiratory disorders (30 preparations), drugs for skin diseases (27 preparations), antibiotics (23 preparations); vitamins and mineral preparations were also frequently mentioned in this section by respondents.

### *Drug-using behaviour*

In response to the question how the subject would behave in case of again developing the symptoms of a recent disease, 24.8% would always see their doctor

first, 40.2% would rarely use the old prescription without consulting with the doctor again, 8.5% respond "don't know", but 26.6% would use the old drug without consulting with the doctor.

### *Sources of drug information*

Most people (90.9%) obtain drug information from doctors, and also from pharmacists (84.9% of respondents) and older age groups rely more heavily on this source. Sixty seven percent of respondents mentioned the accompanying medicine leaflet as a source of information. This source of information was valued more highly by the respondents with higher education ($p < 0.001$) and by women ($p < 0.005$). Most of the youngest group (18–25 years old, 69.2%) obtained information also from their parents. The accompanying leaflet was a source of information for 66.9% of respondents, the advertising leaflets from the companies for 25.3%, mass media for 35.5% and colleagues for 26.4%. It may be hard to distinguish, however, to which extent this information reflects the "real" drugs vs. drug-like products.

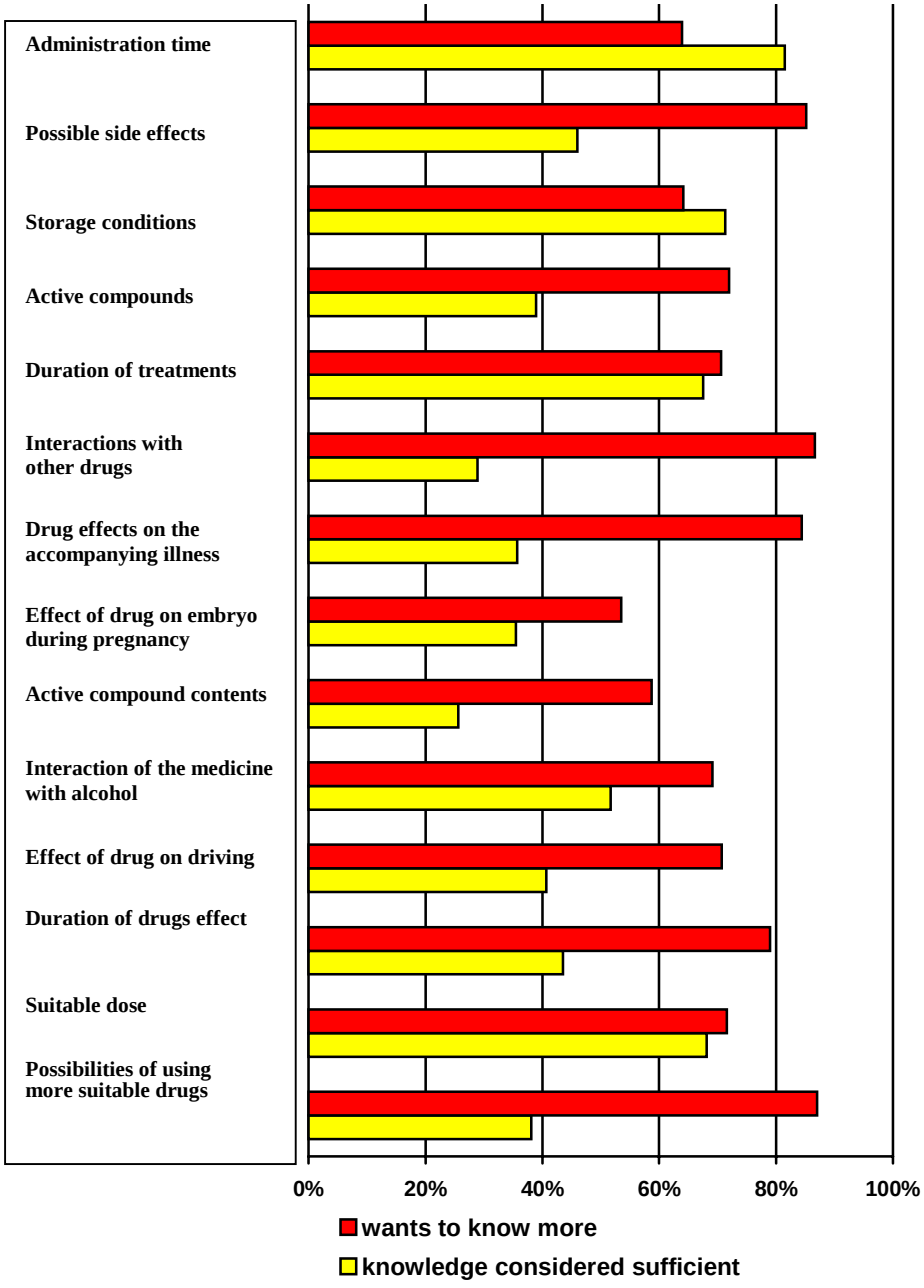
### *Respondents' opinions about drug use and what more they wish to know about the medicines*

We asked the respondents what they usually know about the drugs that they use, how they use these drugs and whether they wish to know more about these medicines. The following aspects of drug information were addressed: administration time (in relation to meals), possible side effects, the active compound, the drug effect on the accompanying illness, the effect of drug on embryo during pregnancy, active compound content, the effect of drug on driving, interaction of the medicine with alcohol, the duration of drug's effect, the possibilities of using a more suitable drug. The results are presented in Figure 1.

Administration time in relation to meals was the issue in which most (81.5%) of the respondents thought to have sufficient knowledge. However, 63.9% of respondents would like to have more information. A question addressed the respondents' usual behaviour when a recipe to take their medicine three times per day is prescribed. Most frequently the respondents would take their medicine after breakfast, lunch and dinner (73.7%); 17.5% of respondents would take the drug after every eight hours and 8.8% of respondents take the treatment when they remember to do so. Most respondents (71.3%) thought that they had sufficient knowledge about storage conditions of drugs, but 64.1% also wished more information. Older respondents (55–65 years old) consider their knowledge about storage conditions sufficient more frequently ($p < 0.05$). Respondents with lower education tended to be more interested in additional information about storage conditions. In response to the question whether the respondents take main storage conditions (temperature, light, and moisture) into account, temperature was considered always by 66.2% of respondents, rarely by 23.5% of respondents, and never by 10.3% of respondents. Light conditions were considered always by

*Figure 1*

**Which knowledge the respondents considered sufficient and what more did they wish to know**



82.4% of respondents, 11.3% considered this rarely and 6.3% of respondents never considered light conditions. Women seemed to follow the storage suggestions more often than men. The suggestion to store drugs in a dry place was considered by 58.6% of respondents, 24.4% rarely and 17.0% never paid any attention to this. Two thirds (68.1%) of respondents evaluated their knowledge regarding dosing sufficient, but 71.6% of respondents also wished more information. Similarly, 67.5% of respondents thought that they knew sufficiently about the duration of treatment, but 70.6% of respondents also wished more information. Women were more frequently confident with their own knowledge ($p < 0.01$). A multiple-choice question addressing the actual knowledge ("Which are the ill-effects of co-administration of analgesics and alcohol?"), received a reply "don't know" by 44.6% of the sample.

Most people are interested in the possibilities of using a more suitable drug (87.0%). In response to this question, only 38.1% of respondents considered their own knowledge sufficient. Great interest was also taken in interactions with other drugs (86.6%), and only 28.9% of respondents evaluated their own knowledge sufficient in this regard. More information about possible side effects of drugs was thought wise by 85.2% of respondents, 46% of respondents evaluated their own knowledge sufficient. Women and more highly educated people tended to evaluate their own knowledge regarding side effects better than men and less educated respondents. To the question if they wished to know the drugs' possible side effects when they use pharmacotherapy, 93.2% of respondents answered that this was important for them.

The effect of drugs on driving interested 70.7% of respondents and 40.7% of respondents considered their own knowledge sufficient. The interest to know more about the active constituents of drugs was expressed by 72.0% of respondents; 38.9% of respondents considered their knowledge sufficient.

In response to the question if an information leaflet in the official language of Estonia accompanied the drugs they buy, 80.2% of respondents responded "sometimes yes", 13.4% "always" and 6.3% "no". Regarding difficulties in reading the medicine leaflet, the respondents mentioned most frequently that they did not understand enough medical terminology and they needed more simple and extensive information. Several respondents did not quite understand the following aspects of drug leaflet information: what are the contraindications to the drug, which is the composition of the drug, which are the possible side effects, how long is it necessary to use the medicine, which is the drug effect on driving, how to choose a suitable dose and which kind of requirements are there for the storage of drugs.

## Discussion

Strategies and policies on drug information are widely debated. Although the need for improving the quality of the information made available to patients is generally recognised, there is a great need for exploring potential new information tools and their acceptability and effectiveness in drug prescription and use (Miselli 1990).

Our study showed that in Estonia there exists the problem of drugs hoarding and using leftovers from previous illnesses. Several households have very many different drugs in their medicine-chests. Naturally not all of these drugs are in active use, but given the frequent treatment with drugs without consulting a doctor, this large variety brings about a significant health risk. The risk of adverse drug reactions increases linearly with the increasing number of drugs used, primarily due to unexpected drug interactions. Furthermore, a significant proportion of drugs used without consulting a doctor (e.g. analgesics) in the medicine-chests are among those which are nowadays considered less safe. As an example, analgin (metamizole) was reported to be in the medicine-chests of 126 households, citramon (a combination preparation containing phenacetin at the time of conducting the survey) in 115.

Certainly there are large differences between the relative risks with different drugs, and there is a conventional cut-off line between the prescription and OTC drugs. In the present investigation we did not try to separate the OTC drugs and prescription drug. The separation between prescription and OTC drugs is to a certain extent arbitrary, as there is a trend of prescription drugs being listed as OTC drugs once they have been well described and found relatively safe. Furthermore, the use of OTC drugs is not without risk, and the OTC drugs are possible sources of many potentially dangerous drug interactions in case of polypharmacy.

The results of the present study confirm that people wish to receive more information about drugs. There is an apparent contradiction when people report whether they consider their knowledge sufficient and whether they want more information about the issue. For example, the administration time (taking the treatment before or after eating) is considered to be known best, as 81.5% of respondents thought that they had sufficient information. Still, 63.9% of respondents said that they wished more information. This contradiction shows that even though the people had a certain degree of self-confidence for decision-making, they would still appreciate additional information.

We notice that the possibility to consider a choice of a more suitable drug is very important to the respondents (87.0%). Only a fraction of this concern corresponded to the interest in cheaper alternatives, as the PCS found only 27% of the respondents being interested in cheaper alternatives (Stobbelaar 1996). When comparing the two studies, the proportion of respondents with an interest to know the drug's influence on driving ability was roughly similar (70.7% vs. 65% in the present study and PCS, respectively). The role of pharmacy was considered important by 85% vs. 87% of respondents in this study and PCS, respectively.

During the preparation of this paper, a consumer survey by *ES Turu-uuringute AS* that included selected questions addressing drug use was carried out (Riivits-Arukonsuo 1999). This survey revealed that the price of medicine is not among the most important features in making the decision to purchase it. The price was of concern for one third of the respondents, whereas this was not exactly the third with the lowest income. Only preparations of minerals were most eagerly purchased by the more affluent people.

The respondents of this study expected drug information first of all from the doctors and pharmacists, but a very big public information role is also played by drug advertisement, primarily about the OTC drugs. It is important to note that since 1998, advertising of the OTC drugs can be directed to the population in Estonia, instead of just the specialists. The suggestions by a doctor remained the most frequent source in decision-making (68% of respondents in the PCS vs. 90.9% in the present study), but 15% of respondents reported the impact of advertising. This comparison indicates that the proportion of respondents relying on doctors seems to have decreased. Even though the discrepancy may be caused by different sampling strategies, the possibility that people are relying less on doctors in the decision-making should give cause for concern. The consumer survey also included a question about the amount of drugs at home. Similarly to our study, the results indicate that the most common drugs at home are painkillers and antipyretics. Older responders frequently have many different cardiovascular drugs at home. Both studies have found, however, that most plentiful medicine-chest contents can be found at homes of people belonging to the age group 25–29.

The response rate was relatively small, possibly because the questionnaire for such a study is not simple to comprehend for many people. Preliminary survey showed that especially for the older people the questions were quite difficult.

## Conclusions and recommendations

Rational drug use can be accomplished by providing the right drug for the right patient in the right amount at the right time with due regard to relative cost and intended therapeutic outcomes. When doctors prescribe medicines for the patients they should pay attention to the fact that the patients would appreciate receiving more thorough information. People are very interested in different aspects of using medicines, in particular concerning the selection amongst drugs with similar effects; the action of the active substance of medicine, interactions with other medicines, possible side effects of drugs, and the effects of drugs on working ability.

Although most of the drugs are sold with an accompanying information leaflet, it appeared that patients are not used to reading this, or have difficulties with understanding the message. This is possibly a reason why people expect drug information first of all from the doctors and pharmacists. The drug leaflet text should be brief, simple and appropriate. It is important that the text is short. If there are too many messages, readers may become restless or bored, or find them hard to remember.

Some of the questions the patients should pose and the medical staff must be prepared to answer (WHO1996) are listed below:

1. What is the name of the medicine and what are the active ingredients? If it is a brand-name medicine, are cheaper generic forms available?

2. I am pregnant, breastfeeding or planning to become pregnant. Should I use this medicine?

3. How does this medicine work? Will it cure me or relieve symptoms?

4. When and how should I take it?

5. How can I tell if the medicine is working? What should I do if it does not work?

6. How long should I continue to take it? Can I stop taking it earlier if I feel better?

7. What are the most common side effects? Are there any rare serious side effects? What should I do if I experience side effects?

8. What should I do if I forget to take these medicines once or several times?

9. Can I take other medicines at the same time? Can I drink alcohol? Is there any food I should avoid? Can I drive the car?

10. Is it possible to become dependent on this medicine?

11. What will happen if I decide not to take it?

12. What are the alternatives to drug treatment?

As a very important role in rational drug use is played by the pharmacies, the personnel should be educated not only in the pharmacology of drug but also in communicating the drug information to the patients. Public education cannot compensate for poor products or inadequate health services or staff. However, it can provide the consumer with a better understanding of the benefits and the potential dangers of drug use, and safe sources of drug information and supply. An informed and empowered consumer is able to act in his or her own and in the best interests of the community.

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