2  PATIENT EDUCATION ABOUT DRUGS

2.1  Introduction

The objective of this chapter is to evaluate patient education about drugs such as demonstrated in community pharmacies, in medical encounters and by drug information centers in relation with patients' informational needs. Secondly, reviews are given of studies about the determinants of pharmacists' patient education behavior and of studies about the effects of teaching pharmacists and other health professionals about patient education.

We have defined patient education as the communicative activities addressed to the patient with the main objective to realize patients' proper drug use. Studies about patient education however mostly concentrate on the frequency or contents of the provided drug information without referring to it's objectives, effects or the quality of the communication process. Although providing drug information may increase patients' drug knowledge, this may not be sufficient to influence patients' drug use. This should be taken into account when interpreting the results of the reviewed studies about patient education.

Firstly, studies that concentrated on patient education about drugs in community pharmacies and in medical encounters with doctors are reviewed in paragraph 2.2 and 2.3 respectively. In addition, section 2.4 concentrates on patients' drug questions addressed to community pharmacies, doctors and drug information centers. The effects of patient education on patients' knowledge and behavior are presented in 2.5. Section 2.6 deals with the development of patient education behavior and presents results of studies about the determinants of this behavior and studies about the effects of teaching health professionals about patient education. Finally the conclusions of this chapter will be presented (2.7) and its consequences for our study will be discussed in paragraph 2.8.

2.2  Patient education in community pharmacy

2.2.1  Introduction

In this paragraph a review is given of studies about patient education in community pharmacies. The main objective is to look at patient education activities in Dutch community pharmacies, while results about other countries allow a comparison with the Dutch situation. Successively attention is given to the provision of written drug information and the provision of verbal drug information with prescription drugs and Over-The-Counter drugs (OTCs).
2.2.2 Written drug information

To the majority of the Dutch patients who receive prescription drugs in community pharmacies, patient package inserts seem to be delivered. This was reported by 60.8% of 222 Dutch pharmacists who participated in a comparative study among Dutch and Swedish pharmacists in the year 1989 [1]. The same study found that 77% of the 273 Swedish community pharmacists reported to deliver patient package inserts to most of their patients. Surveys among pharmacists in the United States of America also found that most pharmacists seem to deliver written drug information to their patients [2,3].

Surveys among patients have shown similar results. In a study among the pharmacy visitors of two Dutch community pharmacies 61.1% (n=287) and 65.9% (n=311) reported the provision of a patient package insert with their last received prescription drug [4]. Another Dutch consumer survey found that 65% of the 211 interviewed chronic drug users reported to have received patient package inserts with their drugs [5]. Another Dutch study found that 63% of the 105 studied OTC-purchases in a community pharmacy were delivered with patients package inserts, as was reported by the pharmacy customers some days after they had visited the pharmacy [6]. Results of patient surveys in the United States of America showed lower percentages of patients who received written drug information. A study among 154 patients who were interviewed immediately after they had received their drugs in the pharmacy, found that 14% had received written drug information with their prescription drugs [7]. A similar study among 1103 persons revealed that 8% of them had been given written drug information the last time they had a prescription filled for themselves [8]. This last study did not include data about the time interval between respondents’ interview and last pharmacy visit. In a more recent study 20-27% of the 1000 interviewed patients reported they had received written materials with their newly prescribed medicines in the previous four weeks [9]. In interpreting these results one has to take into account the influence of patients’ memories, as the time-interval between pharmacy visit and interview has been different in the reviewed studies. Besides, some studies include only data about the delivery of written drug information, without distinguishing drug labels and patient package inserts. Based upon this review one may conclude that in Dutch community pharmacies most patients receive written drug information, while in the United States of America the delivery of written drug information to patients seems to be less common.

2.2.3 Verbal drug information

As written drug information stands for the standardized drug product information, verbal information may be considered as the individualized drug information given to patients. Verbal drug information may be provided unrequested for, but could also be given in response to patients’ queries. This last situation will be discussed in detail in section 2.4, which focuses on patients’ questions about drugs. In this section we concentrate on the frequency of
providing verbal drug information in community pharmacies, without distinguishing situations in which patients ask for this information or receive the verbal information unrequested for. The reviewed studies concentrate on the provision of verbal information, whereas less attention is given to the nonverbal aspects of the communication process. As emotional communication is transferred by nonverbal information, data about the verbal information are mainly limited to the contents of the communication between patients and health professionals [10]. Successively we review studies about the provision of verbal drug information (frequently called patient counseling) with prescription drugs and with OTCs.

**Prescription drugs**
At first we present the results of pharmacists’ and patients’ surveys about verbal drug information with prescription drugs, which is followed by the results of observational studies.

*Pharmacists’ and patients’ reports*
In the Netherlands the majority of the patients seems to be given verbal drug information when receiving a drug prescribed for the first time, as was reported by the majority of 217 interviewed community pharmacists. At the same time 76.5% of the pharmacists reported to deliver most refills without verbal drug information. Similar results were found among the Swedish pharmacists [1]. Others also found that pharmacists reported large differences in patient counseling activities in the case of delivering refills or new prescriptions [3].

Some studies concentrate on drugs that are prescribed for the first time. Kirking interviewed 506 practicing pharmacists (USA), who reported on the average to provide verbal drug information with 40% of the new prescriptions [11]. Several studies however investigated pharmacists’ activities without distinguishing new prescriptions or refills. In a survey among 200 practicing members of the American Pharmaceutical Association these pharmacists reported to provide verbal drug information to 60% of the patients who receive prescribed drugs [3]. Results of a survey among 1886 Canadian pharmacists showed that counseling was said to be offered on an average of 52.1 ± 27.1% of the prescriptions dispensed [12]. In a survey among 1364 Australian pharmacists these pharmacists reported giving advice to on average 32 customers (sd=23) daily and they estimated that 54% of the counseling episodes had been related to prescription drugs, without mentioning the average number of daily pharmacy visitors or prescription drug deliveries [13].

Patients’ reports show other results. In a Dutch study only 27% of the 77 patients belonging to 4 pharmacies reported to have received verbal information in the pharmacy, in the case of a drug prescribed for the first time [14]. In another Dutch study large differences were found between the two studied pharmacies: 30% and 70.7% of both patient populations reported to have received verbal drug information with their last received (new or refilled) prescription drugs [4]. In a nationwide telephone survey in the USA 28% of the 1103
respondents reported that some verbal information was given to them at the pharmacy the last time they had a prescription filled for themselves [8]. In a mail survey among 144 households, about half of the respondents reported that they usually were not given verbal dosage directions by the pharmacists, while the other half reported their pharmacists usually explained how to take the prescribed medicines. These respondents also reported that their pharmacists generally did not explain how they should store their drugs or did not warn them about possible side effects. On the other hand they reported that their pharmacists were available most of the time to answer their questions about drugs [15]. A telephone survey among 500 households revealed 4 out of 10 patients reported to have received pharmacists counseling on the prescription delivered within the last 6 months [16]. The results of these studies may be influenced by patients’ memories, because of the time intervals between interviews and pharmacy visits. McMahon and Clark found higher percentages of provided information in their interviews with 154 patients, which were carried out immediately after their prescriptions had been dispensed (45% refills). The majority of these patients reported to be told how often to take the drug (68%), how much to take each time (64%) and the best way to take the drug (71%) [7]. Some studies revealed an influence of patients’ characteristics on the provision of drug information. Morris and Grossman found an age influence on the frequency of patient counseling in community pharmacies: 25% of the patients older than 60 and 35% of the patients up to 60 reported having been counseled by their pharmacists when receiving a drug prescribed for the first time [9].

Observational data
Mason and Svarstad observed patient encounters about 2 new prescribed medication in 40 pharmacies [17]. In 70% of the 80 observed contacts verbal drug information was given to the patient, among which the name of the medication. Large differences were found in the number of verbal instructions which were given in the 40 participating pharmacies, and in the average numbers of verbal instructions given with each drug. These results stress the importance of studies among a representative sample of pharmacists, which should also include data about the delivered medication. An earlier study found that 20% of the observed pharmacists (n=100) asked their patients whether they understood the "as directed" instructions of their physicians, which were on new prescriptions [18]. A study among 192 pharmacies of the state Washington revealed that 47% of the observed pharmacists explained drug instructions and 7% warned about concomitant use with aspirin when Benemid was prescribed for the first time, although the state board regulation requires pharmacists to explain these directions orally [19]. An analysis of 176 observation hours of 8 community pharmacists in the USA showed that 21-24% of the patients picking up their medications received verbal drug information from their pharmacists [20]. A UK study observed 718 prescription drugs deliveries in 20 community pharmacies and found that verbal drug information was given in 13.6% of these contacts, although if the medicines were handed out by the pharmacists 27.2% of the patients received verbal drug information [21].
An overview of the frequencies of delivered verbal information in community pharmacies, such as found in the different studies is shown in table 2.1.

<table>
<thead>
<tr>
<th>(Ref)</th>
<th>Publ*</th>
<th>%inf data</th>
<th>%inf studied</th>
<th>collection</th>
<th>population</th>
</tr>
</thead>
<tbody>
<tr>
<td>(11)</td>
<td>1984</td>
<td>40</td>
<td>-</td>
<td>interview</td>
<td>506 pharmacists</td>
</tr>
<tr>
<td>(3)</td>
<td>1992</td>
<td>-</td>
<td>60</td>
<td>interview</td>
<td>200 pharmacists</td>
</tr>
<tr>
<td>(8)</td>
<td>1982</td>
<td>-</td>
<td>28</td>
<td>interview</td>
<td>103 patients</td>
</tr>
<tr>
<td>(16)</td>
<td>1994</td>
<td>-</td>
<td>40</td>
<td>interview</td>
<td>500 patients</td>
</tr>
<tr>
<td>(9)</td>
<td>1987</td>
<td>25-35</td>
<td>-</td>
<td>interview</td>
<td>1000 patients</td>
</tr>
<tr>
<td>(7)</td>
<td>1987</td>
<td>-</td>
<td>50</td>
<td>interview</td>
<td>154 patients</td>
</tr>
<tr>
<td>(14)</td>
<td>1990</td>
<td>27</td>
<td>-</td>
<td>interview</td>
<td>77 patients</td>
</tr>
<tr>
<td>(18)</td>
<td>1974</td>
<td>20</td>
<td>-</td>
<td>observation</td>
<td>100 pharmacists</td>
</tr>
<tr>
<td>(19)</td>
<td>1975</td>
<td>47</td>
<td>-</td>
<td>observation</td>
<td>192 pharmacists</td>
</tr>
<tr>
<td>(17)</td>
<td>1984</td>
<td>70</td>
<td>-</td>
<td>observation</td>
<td>40 pharmacies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>80 contacts</td>
</tr>
<tr>
<td>(20)</td>
<td>1986</td>
<td>-</td>
<td>21-24</td>
<td>observation</td>
<td>8 pharmacies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>718 contacts</td>
</tr>
<tr>
<td>(21)</td>
<td>1990</td>
<td>-</td>
<td>13.6</td>
<td>observation</td>
<td>20 pharmacies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>718 contacts</td>
</tr>
</tbody>
</table>

* year of publication; ** pr=prescription

In interpreting the results of the listed studies one should notice that some studies were carried out many years ago, what may explain the lower percentages of patients who received verbal drug information in these studies. Another remark concerns the definitions which were used about verbal drug information, as some studies included aspects like the number of dispensed tablets and the name of the drug while others did not. In general the observational studies present lower percentages of patients who were given verbal drug information than the surveys. The results of observational studies demonstrate that verbal drug information is given more frequently in the case of drugs that are prescribed for the first time than in the case of refills.

**Contents of verbal drug information**

The kind of drug information given to patients about prescription drugs, may vary from dosage instructions to explanations of drug activities and side effects. In a survey Swedish and Dutch community pharmacists reported that the verbal drug information given most frequently in
their pharmacies concerns the instructions about drug dosage and drug administration. Less frequently information is given about the effects, side effects and storage conditions of prescription drugs [1]. McMahon and Clark interviewed 154 patients immediately after their prescriptions (45% refills) had been dispensed and found 68% had been told in the pharmacy how often to take the drug, 64% how much to take each time and 71% about the best way to take the drug [7]. Morris found that 21% of the 1103 patients who had received prescription drugs reported they were given information about directions to use, 5% about side-effects and 5% about the purpose of the medicine [8]. Similarly, others also found that the majority of the verbal drug information in community pharmacy concerns the repeating of logical label instructions [3,7,9,11,15,17,21].

**Over-the-Counter drugs (OTCs)**

In a survey 42.9% of the interviewed Dutch pharmacists (n=217) and 27.5% of the Swedish pharmacists (n=270) reported to provide verbal information in the majority of the selfmedication contacts [1]. A survey among 100 technicians and 109 pharmacists of 45 community pharmacies in the United Kingdom revealed that both groups differed in their verbal drug information in the case of OTC enquiries. The pharmacists reported to provide verbal information in 79% of these contacts, while the technicians provided verbal information in 19% of these contacts [22]. In a study among elderly patients who kept drug diaries, the analysis of these drug diaries revealed that in 10% of the 1453 OTC purchases verbal information was given to patients. This concerned merely information about the purpose of the remedy, how to take the drug and how it worked, while patients were seldom warned about possible adverse effects [23].

Another study analyzed 711 audiotaped OTC contacts in which patients requested pharmacists’ advice. 84% Of the supplied information items concerned product advice, drug efficacy, drug dosage or other pharmaceutical aspects such as storage requirements [24]. Observational data about 632 OTC purchases in Ireland showed that 22.3% of these medicines were sold with advice. Customers aged over 65 were found to receive less advice than customers in other age groups [25]. Others found a similar age influence in the case of prescription drugs [9]. Observations concerning pharmacy patient contacts in one Dutch community pharmacy revealed that 35% of the 105 OTC purchases were delivered with verbal drug information, which mainly consisted of product advice and drug instructions [6].

**2.2.4 Conclusions**

The majority of the customers of Dutch community pharmacies receive patient package inserts with their medications. Verbal information seems to be given with the majority of the new prescribed drugs, but in the case of refills patients are mostly not given any verbal drug information. In general the verbal information about prescription drugs consists of instructions
how to take the medication. Less frequently attention is given to the effects, adverse effects and storage conditions of drugs. The verbal information that is given about OTCs consists of product advice and drug instructions.

About the frequency of providing verbal or written drug information different results are presented in the reviewed studies, even when they concern community pharmacies in the same country. In interpreting these differences one should take into account the comparability of studies with respect to the collected data and studied populations of patients, medications and pharmacists. The reviewed studies used pharmacists’ self reports, patients’ reports or observations to study patient education behavior in community pharmacies. We preferred studies that used observational data, as patients’ or pharmacists’ reports may be affected by social desirability and the influence of patients’ memories, in particularly when patients’ general experiences or pharmacists’ general behavior are studied. In addition, the studied medication has been found to be related with the frequency of patient education, what may affect the outcomes of the reviewed studies. Another remark concerns the studied populations of pharmacists and patients. Pharmacists seem to differ in their patient education activities, while also differences were found between pharmacists and technicians. In addition, the frequency of patient education was found to be related with patients’ age and sexe. As a consequence one should attach most importance to observational studies among a representative sample of community pharmacies, which include information about the studied pharmacists, technicians, medications and patients.

2.3 Patient education by doctors

2.3.1 Introduction

Patients may be informed about drugs by their pharmacists as well as by their doctors, especially in the case of prescription drugs. The information of both information sources have to be adjusted to each other. The information given in the pharmacy is either complementary or reinforces what has been told by the doctor, thereby increasing the effectiveness of the information given to patients. In the last 25 years doctor patient communication has been frequently studied and several reviews and meta-analyses have been published in this respect [10, 26-32]. Based upon these studies, we review doctors’ patient education about drugs and consider it’s adjustment to the activities in community pharmacies in this respect.

2.3.2 Verbal drug information

Successively the results will be presented of studies that used patients’ or doctors’ reports and studies that used observational data about patient education about drugs in medical encounters.
Patients’ and doctors’ reports
The information exchange, consisting of information giving and information seeking between doctors and patients is not without problems. Waitzkin showed that in 65% of the consultations doctors underestimate patients’ desire for information [30]. Hulka interviewed 42 doctors and 242 diabetic patients about their medical encounters, and found a discrepancy between the answers of both groups. Although the doctors told they had informed almost all of these patients about the drug name and type of insulin, only one third of the patients could mention these information aspects correctly [33]. A more recent study found that 55-59% of the 1000 interviewed respondents reported their doctors had provided information about how to use a new medication. Just over 30 percent reported to have been warned about the potential risks of the prescribed medications and 39-46% reported they had not received any counseling at the doctor’s office [9]. Similar results were found in interviews with 1101 individuals about their last medical encounter, as 51% reported their doctors had given them information about the purpose of the medication, 47% about how to use the drug and 11% about the side effects [8]. A national pharmacy survey among 8831 patients who were handed out their prescription drugs revealed that 75% had not received any mention of possible side effects form either doctor or pharmacist [34]. Ascione interviewed 167 cardiac patients, who reported that doctors are more likely to discuss the drug regimen (68% of the patients) than the drug side effects (26%) [35].

McMahon and Clark however found other results in interviews with 145 patients immediately after their prescription had been dispensed, as 82% reported they had been informed by their doctors about possible side effects and 75% about the duration of treatment [7]. In a Dutch study 247 patients were interviewed some days after they had received a new or refilled prescription and they reported most frequently to have been told about the drug dosage (39%) and other drug instructions while 5% reported to have been told about drug side effects by their doctors [36]. Similar results were found in a Finnish study among 2800 subjects purchasing drugs that have the potential to impair driving skills [37]. The majority of the respondents reported to have been told by doctors how often to take the tablets (67%) and how many tablets to take each dosage time (65%), while a minority had been told about the mechanism of drug action (33%) or the drug side effects, among which the impairment of driving skills (20.5%). Many respondents were uncertain whether they had received such information from their doctors, which reflects the limitations of verbal information exchange about drug therapy in doctor patient contacts.

Observational data
The analysis of 2517 videotaped medical encounters of 55 Dutch general practitioners revealed that patient education was given extensively attention in 8% of these cases [38]. Another Dutch study found that in the majority of the 100 analyzed audiotaped medical encounters of 10 general practitioners (GPs), the patients were not explained about the importance of the treatment and the GPs did not ask patients’ views on realizing the
therapeutic recommendations in daily practice [39]. In another Dutch study 607 medical encounters of 75 GPs were observed and these doctors provided most frequently information about the daily dosage regimen (59% of the encounters) and about how long the treatment should be continued (39%), while in 11% of the observed encounters information was given about drug side effects [40]. Similar results were found in the analysis of 413 videotaped medical encounters about new complaints which required a prescription, as the 52 GPs involved were found to explain most frequently how much to take of the prescribed drug each day (50% of all observed encounters), each application (40%) and for how long to take the drug (31%), while 8% of the patients were informed about possible side effects [41]. Boreham observed 34 medical encounters which concerned first consultations of female patients and found these doctors mostly provided information about the drug name, the type of drug, its effects and drug instructions. In one third of these medical encounters patients were given information about drug side effects, which information was mostly given as a response to patients’ questions [42]. An analysis of 167 tape recorded medical encounters with cardiac patients who used their medication for at least one month, revealed that doctors discussed the drug regimen in 68% of these cases and the drug side effects in 26% [35]. The results of studies that present data about the percentages of patients who received drug information from their doctors are presented in table 2.2.

<table>
<thead>
<tr>
<th>(Ref)</th>
<th>Published</th>
<th>%Inf</th>
<th>Data collection</th>
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</tr>
</thead>
<tbody>
<tr>
<td>(16)</td>
<td>1974</td>
<td>66.1</td>
<td>interview</td>
<td>118 male patients</td>
</tr>
<tr>
<td>(16)</td>
<td>1974</td>
<td>83-86</td>
<td>interview</td>
<td>262 female patients</td>
</tr>
<tr>
<td>(8)</td>
<td>1982</td>
<td>51*</td>
<td>interview</td>
<td>1101 patients</td>
</tr>
<tr>
<td>(9)</td>
<td>1987</td>
<td>54-61</td>
<td>interview</td>
<td>1000 patients</td>
</tr>
<tr>
<td>(4)</td>
<td>1985</td>
<td>70</td>
<td>interview</td>
<td>400 patients</td>
</tr>
<tr>
<td>(36)</td>
<td>1983</td>
<td>&gt;39</td>
<td>interview</td>
<td>247 patients drugs</td>
</tr>
<tr>
<td>(41)</td>
<td>1986</td>
<td>68*</td>
<td>observation</td>
<td>413 patients doctors</td>
</tr>
<tr>
<td>(40)</td>
<td>1991</td>
<td>&gt;59</td>
<td>observation</td>
<td>607 patients doctors</td>
</tr>
</tbody>
</table>

* new prescriptions (other references did not report about the prescriptions involved)

In general doctors seem to inform the majority of their patients about the prescribed medication, which mainly concerns drug dosage instructions. In interpreting the listed percentages of patients receiving any verbal information, one should realize that the results may be influenced by several differences between the reviewed studies, such as the recency of the presented data, the time interval between encounter and interview, the data collection
method, the representativity of the studied populations and the prescriptions (new or refill) and medications involved.

Finally some results are presented about the relationships between patients’ or doctors’ characteristics and the provision of information in medical encounters.

**Patient’s characteristics**
Female patients seem to be in favor to receive information from doctors [16,30,32]. Waitzkin also found older patients received more explanations, although poorer prognosis and length of acquaintance may have been involved [30]. However, other studies conclude younger patients receive more information from their doctors [9,43]. Patients’ education also seems to predict doctors’ tendency to give information. Higher educated patients received more information than patients with a low education [30,43]. Apart from education, patients’ social class, as measured by their own or their spouses’ occupations, was also associated with the amount of information they obtained. Patients from corporate and upper middle class backgrounds seem to receive more explanations than patients from lower middle class background [30]. Furthermore patients’ communicative style also seems to be related with doctor’s informing behavior. A strong correlation has been found between the frequency with which patients ask questions and the degree to which doctors provide medical information in general and diagnostic and treatment information in particular [42,43].

**Doctor’s characteristics**
In an analysis of 537 audiotaped medical encounters Roter found that the 26 female physicians were more involved in information giving than their 101 male colleagues. The average number of biomedical information statements among male physicians was 19.0 per visit, while for the female physicians this appeared to be 33.0 statements per visit [32]. No separate data were mentioned about drug information statements. Waitzkin studied doctors’ age influence and found no relationship between information giving and doctors’ age [30]. In this study a weak relationship was found between doctors’ general attitudes about information and their actual informing behavior. Doctors’ perceptions of patients’ desire for information tended to predict their actual behavior partially, although these perceptions proved to be inaccurate most of the time [30].

**2.3.3 Conclusions**
It seems that doctors inform the majority of their patients about the prescribed drugs, which information mainly concerns drug instructions (dosage, duration of treatment) while less attention is given to the effects and side effects of drugs. We conclude that patients are informed about the same drug aspects by their doctors as by their pharmacies.
2.4 Patients’ questions about drugs

2.4.1 Introduction

One of the factors the effectiveness of patient education depends on is the degree to which the provided drug information is adjusted to patients' individual informational needs. Various definitions and instruments have been used to study patients’ needs for drug information. Some studies looked at patients’ satisfaction with the provided information, while other studies analyzed patients’ interests in drug information or patients’ drug informing behavior such as addressed to different kinds of information sources.

This paragraph deals with patients’ drug informing behavior in their contacts with health professionals. In interpreting the results one has to realize that patients’ questions only partly express their informational needs about drugs. For this reason we are also interested in patients’ questions addressed to drug information centers, as these facilities are approached anonymously by patients and have the explicit objective to answer patients’ questions. These characteristics of information centers possibly facilitate patients’ questioning, which may result in other types of drug questions than patients’ questions addressed to individual health professionals. Successively we present results of studies that looked at patients’ drug questions addressed to community pharmacies, doctors and drug information centers.

2.4.2 Questions in community pharmacies

Number of questions

Studies about patients’ drug questions in community pharmacies mainly concentrated on the kind of questions (44-46). Only some studies present data about the frequency of patients’ drug questions in relation with the number of daily pharmacy visitors or delivered drugs (6,7,21). McMahon interviewed 154 patients immediately after their prescriptions had been dispensed and found one third reported they had asked any questions about their drugs. Unfortunately the article does not mention whether patients had asked their questions in the pharmacy or in their contacts with the physician (7). In an observational study about 105 OTC-contacts in one community pharmacy, patients asked for information in 36% of the OTC-purchases (6). One study expressed patients’ questions in frequencies per time unit and reported an average of one drug question every 15 minutes, which result was based upon the analysis of 122 observed hours in 11 community pharmacies (46). A very low number of patients’ questions in community pharmacies has been found in the United Kingdom, where only 1.1% of the 718 observed patients in 20 community pharmacies requested information about their prescription drugs (21). In another study 2478 patients’ questions were registered by the 16 pharmacists involved and the analysis revealed that younger patients asked more
frequently questions than older patients (44). In a survey among 1000 patients these results could not be confirmed (9).

Patients seem to experience barriers in asking questions in community pharmacies, among which a lack of privacy and hesitation to take time of the pharmacy staff (14). In this last study almost one third of the interviewed 77 pharmacy visitors reported to appreciate a separate room in the pharmacy where drug problems could be discussed privately with the pharmacist. Apparently patients do not wish to discuss their drug questions in public.

**Kind of questions**

An analysis of 767 patients’ inquiries that were listed by 15 community pharmacists showed that 52.3% of patients’ drug questions concerned the recommendation of OTCs and 33.6% concerned prescription drugs (45). Studies that have used similar data found that patients most frequently asked questions about OTCs, while other frequently asked questions concerned the instructions and indications or effects of prescription drugs (44,46,47). Unfortunately these studies did not relate these results with the frequencies of delivering OTCs and prescription drugs in the investigated pharmacies, and so the relative frequencies of patients’ questions about OTCs and prescription drugs are not known. Table 2.3 list the distribution of drug related questions among different information categories, such as found in several studies that included both prescription drug contacts and OTC contacts.

<table>
<thead>
<tr>
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<td>number of questions:</td>
<td>3743</td>
<td>767</td>
<td>204</td>
<td>1246</td>
</tr>
<tr>
<td>Dosage, administr</td>
<td>10.8</td>
<td>3.4</td>
<td>20.1</td>
<td>28.1</td>
</tr>
<tr>
<td>Indication, effects</td>
<td>22.8</td>
<td>19.2</td>
<td>23.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>8.2</td>
<td>8.6</td>
<td>15.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Drug interaction</td>
<td>4.0</td>
<td>6.3</td>
<td></td>
<td>5.5</td>
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<tr>
<td>Drug recommendation</td>
<td>19.0</td>
<td>43.4</td>
<td>-</td>
<td>26.9</td>
</tr>
<tr>
<td>Drug comparison</td>
<td>9.7</td>
<td>1.9</td>
<td>13.2</td>
<td>-</td>
</tr>
<tr>
<td>Drug identity</td>
<td>-</td>
<td>7.9</td>
<td></td>
<td>5.1</td>
</tr>
<tr>
<td>Other aspects</td>
<td>25.5</td>
<td>17.1</td>
<td>19.6</td>
<td>16.6</td>
</tr>
<tr>
<td>Total questions</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

↑ = included in category above; - = category not included
Table 2.3 demonstrates that patients’ drug questions in community pharmacies mainly concern drug instructions (dosage and administration), drug indications, drug effects and drug recommendations. As the reviewed studies used different categories to classify patients’ questions, which may have influenced the listed frequencies in table 2.3. In addition, one should take into account that these results do no reveal to what extent patients’ questions concerned OTCs or prescribed medicines. As patients’ informational needs may be related with the drugs involved, we will review studies about the kinds of questions in the case of OTCs or when prescription drugs are concerned.

**Over-The-Counter drugs (OTCs)**

Questions about Over-the-Counter medication (OTCs) in community pharmacies mainly concern the recommendation of a drug (6, 22, 44-47). Ried also looked at the kind of OTCs on which questions concentrated and found that 32.4% of the 269 OTC-related questions concerned medications for upper respiratory infection, 17.2% were about dermatological products and 13.6% referred to analgesics (46). The time of the year (december) might account for the high frequency of questions about upper respiratory infections found in this study. Another study which was carried out in the springtime (may) revealed cough to be the symptoms most frequently presented in the pharmacies (22).

**Prescription drugs**

Patients seem to ask for different drug aspects in the case of prescription drugs. Several studies found that patients’ questions about prescribed drugs mainly concern dosage schedules and drug instructions (21,44). Others however found that next to the questions about drug dosage and drug administration, patients also frequently asked questions about the course of action and indications of prescription drugs (45,46).

**2.4.3 Questions addressed to doctors**

Roter summarized the results of 61 independent studies containing descriptive variables from objectively measured medical encounters (31). Doctor patient interaction concerned a great deal of question asking from doctors and information giving by patients, while only 6-7% was devoted to patients’ question asking. The same asymmetric distribution in question asking between doctor and patient was found by others (30,48,49). Waitzkin revealed in an analysis of 336 encounters that patients asked on the average 2.8 questions per medical encounter (30). Patients are found to differ in their questioning behavior, as a range of 0-31 patient questions was found in 67 audiotaped patient physician contacts (50). Bain found at 24% of the observed 556 medical encounters patients asked any questions (51). Observational studies also found that patients ask few questions in medical encounters (42,43). An analysis of 413 videotaped medical encounters about new complaints, revealed that 6% of the patients
asked questions about the prescribed medications (41). Roter found an increased average number of patients’ questions after the experimental group of 100 patients received a 10 minute session with a health educator in the waiting room (52). Similarly, an increased number of patients’ questions was found if patients were encouraged by health educators to ask their questions in medical encounters (43).

Some studies concentrated on the influences of patients’ or doctors’ characteristics on their communication patterns. Several studies suggest that working class patients are less likely to question their doctor than patients of higher social classes (30,42,53). In van Zuuren’s study this could also be influenced by patients’ ages, as the higher educated were found to be younger than the lower educated. An age influence was found in a survey study among 2667 Dutch hospital patients. The results of this study showed that patients aged 61-80 asked significantly fewer questions and discussed their problems less often than patients in the 20-50 year age range (54). However others found no significant differences between patients over and under age 60, although among both categories question asking was not common (9). Waitzkin found that the differences in question asking among patients of different social classes were not related to differences in information desire. He concluded that differences in language use may constitute a formidable barrier in interaction between professionals and clients (30). Patients’ gender also seems to have an influence, as female patients are found to ask more questions than male patients (30,32). Besides doctors’ gender also seems to be important in this respect. In an analysis of 537 audiotaped medical consults, Roter found that male as well as female patients were more engaged in question asking when with female doctors than when with male doctors (32).

Based upon the reviewed studies we conclude that patient’s question asking in medical encounters is not common. Embarrassment seems to be the most frequently reported barrier in this respect (55). The only study that reported about patients’ drug questions, revealed that in 6% of the 413 videotaped medical encounters patients asked questions about the newly prescribed medication (41).

### 2.4.4 Questions addressed to drug information services

Several health education programs have effectively used the telephone as a patient education medium (56). Our interests concern patients’ use of drug telephone services and the kinds of questions they address to these services. At first a short overview is given of the development and organization of these services.

Since the late 1960’s drug information services have been initiated in the Europe and in the USA. The number of drug information services in the USA extended in 1992 to more than 100 centers (57). In an overview, published in 1990, the number of 31 drug information services in 16 European countries was mentioned (58). Originally the objectives of the
majority of these drug information centers were to provide drug information to health care professionals such as pharmacists, physicians and nurses (59). Nowadays drug information services increasingly provide their services to drug users in addition to their originally profession directed activities and may be connected with hospitals (pharmacies), medical centers, universities, consumers’ organizations as well as with pharmacists’ organizations (57). Staff members are frequently pharmacists and they have sometimes also clinical practice functions in order keep credibility with their peers (58,59). The quality of the provided services is mostly guaranteed by training the drug information providers in communication skills, consultation skills and the provision of comprehensible and clear drug information (57,60). Since in a face to face communication much of a message is conveyed through nonverbal means, the use of a telephone is restricted by communication pitfalls and communication skills become paramount. Some drug information services have established a quality assurance program which includes daily professional audits and periodic group reviews of selected cases (61).

Kind of questions
In a 3 month period the Drug Information Telephone Service of the Dutch pharmacists received 1566 telephone calls from the public (62). In an overview of 31 European drug information centers for the public as well as for health professionals, the number of enquiries per annum varied from 1000 to 35000 (58). In general studies about drug information telephone services have shown patients’ interests in these services (57,61). An overview of patients’ drug questions received by toll free drug information services addressed to the public is given in table 2.4 (62-64).
Table 2.4 Patients’ questions addressed to drug information services

<table>
<thead>
<tr>
<th>Information category</th>
<th>1833 (62)</th>
<th>175 (63)</th>
<th>108 (64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse effects</td>
<td>33.2</td>
<td>44</td>
<td>24.8</td>
</tr>
<tr>
<td>Dosage, administr</td>
<td>10.5</td>
<td>20</td>
<td>*</td>
</tr>
<tr>
<td>Indication, effects</td>
<td>18.0</td>
<td>*</td>
<td>8.3</td>
</tr>
<tr>
<td>Drug interaction</td>
<td>7.9</td>
<td>19</td>
<td>15.7</td>
</tr>
<tr>
<td>Contra indication, pregnancy</td>
<td>4.5</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Drug identity/name</td>
<td>12.1</td>
<td>*</td>
<td>15.7</td>
</tr>
<tr>
<td>Other aspects</td>
<td>16.6</td>
<td>17</td>
<td>35.5</td>
</tr>
<tr>
<td>Unknown</td>
<td>3.2</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* category not included

In interpreting the results listed in table 2.4 one has to take into account that the drug information services involved, differ in their classifications of drug questions. Nevertheless one may conclude that patients’ questions addressed to drug information centers most frequently concern the adverse effects of drugs (62-65).

Patients’ reasons to call

In an evaluation study of the Dutch Drug Information Telephone Service, 200 patients were interviewed by telephone after they had called this information service. 39% Reported to have tried to receive information from their general practitioner or pharmacy before they called the drug information center (62). Another study reported that 50% of the first time calls occurred within 2 days of patients’ visit to the pharmacy (64). Table 2.5 lists patients’ answers on the question why they had used the drug information telephone service, in stead of their doctor or pharmacist (62).

<table>
<thead>
<tr>
<th>Reported reasons to call drug telephone service</th>
<th>(n=200)</th>
<th>(%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indepent answer/second opinion</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>Instead of doctor</td>
<td>31.0</td>
<td></td>
</tr>
<tr>
<td>Instead of pharmacist</td>
<td>28.0</td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td>7.0</td>
<td></td>
</tr>
</tbody>
</table>
The most frequently reported reason for using the drug information service was patients’ needs to receive drug information from an independent source and/or to get a second opinion about their drug question. Patients who reported to use the telephone service instead of their pharmacy or doctor, mentioned several explanations for not being satisfied by their pharmacy or doctor. Receiving an insufficient answer was found to be mentioned most frequently, while patients also reported to feel uncomfortable to ask questions when the doctor or the technician were busy (62). These feelings of embarrassment of asking questions to health professionals, were also reported by users of another drug information center (66).

2.4.5 Conclusions

A review has been given about patients’ drug questions addressed to community pharmacies, doctors and drug information services. These results only partly reveal patients’ informational needs about drugs, as patients may also use other information sources to satisfy their informational needs.

Patients’ questions addressed to community pharmacies and doctors on the one hand and to drug information centers on the other are found to differ. In general patients ask few drug questions in medical encounters and when they visit community pharmacies. Their questions addressed to pharmacies are found to concentrate on drug recommendation in the case of OTCs and on drug instructions in the case of prescription drugs. No results were found of studies about patients’ drug questions in medical encounters. Drug information telephone services receive more questions about the adverse effects of drugs compared to community pharmacies. Patients seem to use a telephone information service because of it’s independence, their need for a second opinion or because the information given by doctors or pharmacies did not satisfy their informational needs. Based upon patients’ reasons for calling a drug information service and their questions addressed to these services, one may conclude that the present level of patient education of both doctors and pharmacists only partly fulfills patients’ informational needs about drugs. Patients only partly express their informational needs in the pharmacy and in their contacts with doctors, although their questions increase when they are encouraged by their health professional.
2.5 Effects of patient education

2.5.1 Introduction

In this paragraph we look at the effects of patient education activities on patients’ drug use, in particular when pharmacists and pharmacy technicians are involved. At first we review studies about the effects of patient education on patients’ drug knowledge, as drug knowledge is a first condition for proper drug use (33, 67-69).

2.5.2 Effects on patients’ knowledge

Drug information may lead to an increase of patients’ drug knowledge when the provided information is well received, well remembered and well understood by patients. For this reason we will pay attention to these different levels of the communication process that participate in influencing patients’ drug knowledge.

Patients’ notice

The first problem in the communication process is that patients may not use the information given to them (70). Especially in the case of mass media, such as written information or video presentations, patients may ignore this information (71). In a Dutch study it was found that 88.3% of the 77 patients who received a drug prescribed for the first time, had read the enclosed patient package insert (PPI). Patients’ reasons for not reading the information given to them were that they felt to know enough about the medicines, trusted their doctors or trusted the medicines which were prescribed (14). In a study about OTCs larger percentages of patients reported not to read the enclosed PPI for reasons of having read the information before and/or having used the drug before (6).

Patients’ recall

Ley’s review of studies about patients’ recall of the information given by doctors showed that on the average patients forget approximately 40% of what they were told (27). Similar results were found among discharged hospital patients: 32% of the 34 patients recalled to be counseled about their drugs (72). Forgetting is associated with the amount of information presented, the nature of the material and with patients’ age, level of anxiety and medical knowledge (27, 73). Besides, recall seems to be related to the category of statement: diagnostic statements being best and instructions being worst recalled (26). This is probably due to primacy and perceived important effects such as found by Ley (74). Several methods have proved to be successful in presenting information to patients in such a way as to enhance their recalling, like simplification, repetition, and the use of specific rather than general advice statements. In addition, the contents of the recalled information can be
influenced by the extent to which patients welcome the information given to them (74). Bertakis found that a concluding statement, which consisted of a summary and a request for patient’s feedback, increased patient’s recall of the provided verbal information significantly. When doctors asked their patients to restate the information given to them and next to it gave appropriate feedback, the recalled information in the experimental group was 83.5% of the verbal information, compared to 60.8% in the control group (75).

Patients’ understanding
Written as well as verbal information will not automatically be well understood by the patient and so the effects of the provided information on patients’ knowledge may be limited. Patients’ understanding of what they have been told or have read has been assessed by patients’ reports about the comprehensibility of delivered information, general medical knowledge tests, direct tests of understanding what has been told or read and readability tests of medical information.

Patients’ reports about the comprehensibility of the provided information were found to be influenced by the concreteness of the survey questions. In the case of general questions about the comprehensibility of a patient leaflet 86% reported being satisfied, while in the case of questions about particular parts of the leaflet only 28% reported being satisfied about the comprehensibility of the leaflet (76). Patients’ selfreport is of course prone to the error of the patient who is wrongly thinking that he has understood when in fact he has not. It is not surprising therefore that even larger percentages of misunderstanding were found with patients’ knowledge tests (27). Several studies looked at patients’ interpretation of drug information and raised serious concerns about patients’ understanding of commonly used written instructions and warnings on drug labels (36,77-78). Studies about the readability of written medical information, conclude that a large majority of written medical patient information is not understood by the general public (16,73,79-80). Ley studied the effects of leaflets with varying difficulty, and found that the easy leaflets led to a significant reduction in medication errors while the difficult leaflets were ineffective in this respect (73). Simplified printed health information leads to an increased understanding by patients. A grade five level seems to be acceptable for printed health information that is addressed to the general public (81).

Verbal information may also cause comprehension problems. Kincey et al found that 75% of the 61 interviewed patients reported complete comprehension of the verbal information they were given (82). Ley reported that 14-43% of general practice patients claimed not to have understood what they had been told by the doctor, while direct tests showed that 35-87% of the patients did not properly understand their prescription instructions (73). Few patients seem to understand commonly used pharmacy terms such as diuretic, antibiotic and oral (83). Research on cognition and learning shows that the understandability of written and verbal
information can be enhanced by using short words and sentences, employing specific rather
than general instructions and checking on major points for comprehension (27).

This brief review shows that failures of understanding drug information seem to occur quite
frequently. The question is why health professionals continue to communicate so poorly, while
patients frequently do not understand what they have been told or have read. The most likely
answer is that patients do not ask questions when they do not understand, which deprives
the health professional of the necessary feedback for the improved communication (73).

Patients’ knowledge
In general patient package inserts (PPIs) may improve patients’ drug knowledge but the
problems of interest, readability, comprehension and recall all limit the potential impact of
PPIs on patients’ drug knowledge (84). In their review Morris and Halperin concluded that
written drug information improves patient knowledge about less commonly known information
such as precautions and drug side effects (85). Brown et al found an increased knowledge
about drug side effects, after verbal as well as verbal plus written instructions about
neuroleptics. Those on high doses of neuroleptics, who were given verbal plus written drug
information gained significantly more medication knowledge than those only given verbal
information (86). Similarly, others found better knowledge effects when written information
supported the verbal drug information compared to only verbal information (87). Ascione et
al also found patients’ drug knowledge, in particular concerning drug side effects, was
improved after providing verbal information in combination with written information or
compliance aids (88). Regner found that printed materials together with verbal consultation
are essential for enabling patients to make appropriate decisions about the course of action
to take if side effects occur (89). An analysis of 167 tape recorded medical encounters of
cardiac patients revealed that patients’ knowledge of the drug regimen was affected greatly
by the extent to which information was given by the doctors (35). De Tullio et al found that
pharmacists’ instruction with demonstration of inhalers resulted in better patient understanding
and performance of the inhaler use (90). Others however found patients’ knowledge about
the treatment purpose was not increased after pharmacists’ counseling (72).

The discrepancy about the effects of patient education on patients’ drug knowledge may be
due to differences in quality and quantity of the educational activities, as well as to differences
in the time interval between intervention and measured knowledge effects. In a review about
the effects of different educational interventions addressed to the elderly, five factors were
mentioned to be important attributes of successful programs for education and behavioral
change, which are relevance, individualization, feedback, reinforcement and facilitation (91).
Most reviews state that although only verbal information or only written information may
increase patients’ drug knowledge, better results are achieved if a combination of both
methods is used (8,73,84,85,91,92).
### 2.5.3 Effects on patients' behavior

The effects of patient education on patients' drug use may be different in the case of short term drug use or long term drug use. Written drug information can be effective in improving patient compliance for short term drug regimens (85,93). Others found that comprehensible PPIs and drug labels directly contribute to reductions of medication errors (73,84).

Compliance of long term treatment requires a combination of interventions, such as clear instructions, recalling, patient selfmonitoring and reinforcement, which have to be applied as long as compliance is required (93). In the case of chronic drug use written drug information was found not to be sufficient for improving compliance (85,94). Culbertson et al found that 45% of the 317 respondents reported that a drug information leaflet had influenced their medication use, but subjects who were elderly, taking cardiovascular drugs or getting refills, were significantly less likely to change as a result of the information provided (95). With respect to the potential harmful effects of information, several authors reported not to found increased side effects nor decreased compliance after providing information about drug adverse effects (26,87,96).

Next to the provision of information, motivating the patient is another possibility to promote patient compliance (97). In addition to information, emotional support bridges patients' uncertainty regarding their treatment and is a crucial element in patients' evaluation of the treatment. This influence was found to increase with a decrease of patients' social class (98). A tailoring programme addressed to chronic drug users, in which each patient is counseled in order to find out his or her every day habits and determine suitable times for drug administration, showed to improve compliance significantly (99). Similarly others concluded that patients' reasons for non compliance may vary and are not limited to patient's lack of drug knowledge. Therefore different educational strategies have to be used to realize proper drug use (88). These results are in agreement with the outcomes of compliance reviews that found a discrepancy between patients' knowledge and behavior, in particularly when chronic treatment is involved (100,101). In two meta-analyses of different intervention types addressed to people with long term health problems, all strategies, except the patient package insert, were found to reduce patients' medication errors (91,102). The overall quality of the educational method, according to the educational principles like individualization, feedback and reinforcement, was found to predict the strength of the effects on patients' behavior. In a recent meta-analysis Mullen concluded that cardiac patient education programs have demonstrated a measurable impact on clinical outcomes like blood pressure and mortality. For drug adherence an influence was found when this was the focus of the intervention, but fewer influence was found when drug adherence was an incidental focus (103). Similarly to the results of earlier meta-analyses, the communication channel was found not to influence the outcome, contrary to the influence of applied educational principles in the education process (91,102,103). Pharmacists' counseling of patients about their diseases and medications, increased patient compliance significantly (89,104). Kincey et al found
compliance to be most likely where patients rated the given advice as ‘very easy’ (82). Svarstad found after reviewing the literature that practitioners who succeed to present therapeutic recommendations clearly and specifically, find higher levels of compliance in their patients (67). Other studies however did not found a relationship between verbal drug information and patient compliance (86,72,105). These differences in results of the reviewed studies may be influenced by differences in studied populations, medications (long term or short term), educational processes, compliance measurement instruments and time intervals between intervention and compliance measurement.

This review concentrates on the influence of educational interventions on patients’ drug use. Adherence to a medication regimen may however also be improved with the use of compliance aids such as special prescription containers that act as memory aids, drug calendars or cards and specialized packages (88,89,104,106,107). Besides certain compliance aids may facilitate difficult drug applications as eye drops and inhalers (107). In this respect pharmacists may use different instruments to support patients in solving their drug problems.

2.5.4 Conclusions

Written drug information, like drug labels and patient package inserts, may improve patients’ knowledge of drug therapy. The effectiveness of the provided information however depends on patients’ notice and understanding of the information given to them. Written drug information may influence patients’ drug use in the case of short term drug therapy, but fewer effects may be expected when chronic drug use is involved.

A more individual approach than the provision of standardized written drug information has to be used to influence patient’s noncompliance with long term drug use. In this respect verbal drug information is needed to identify and overcome potential barriers to compliance, especially in the case of chronic medication. Besides, verbal drug information may be needed to respond to patients’ informational needs and to explain the standardized written drug information of patient package inserts, drug labels and drug leaflets, which are frequently misunderstood by patients. The effects of verbal information on patients’ knowledge however are limited by memory influences.

A combination of verbal information and written information overcomes the limitations of both methods and seems to be most successful in improving patients’ drug knowledge and drug taking behavior. The overall quality of the educational interventions however is found to predict their influence on patient’s behavior. In this respect educational principles like relevance, individualization, feedback and reinforcement are found to increase the effectiveness of patient education activities.
2.6 Development of patient education behavior

2.6.1 Introduction

This paragraph concentrates on the development of patient education in community pharmacies. At first a review is given of studies about the factors involved in pharmacists’ patient education behavior, which is followed by reviewed studies about the effects of communication courses on patient education behavior. Unfortunately research about patient education in community pharmacies concentrates on pharmacists’ behavior, while almost no attention is given to pharmacy technicians. As in Dutch community pharmacies pharmacy technicians are involved in the majority of the patient contacts, the results of the reviewed studies have to be translated into their consequences for technicians’ patient education behavior.

2.6.2 Pharmacists’ patient education behavior

Research about patient education in community pharmacies lists several factors which are related with pharmacists’ behavior in this respect. We will classify these factors into 3 categories: motivation for patient education, abilities to practice patient education and experiences with practicing patient education behavior. Although the reviewed studies used different descriptions of pharmacists’ behavior, among which patient education and patient counseling, one should bear in mind that the studied behavior mostly concerned the provision of verbal drug information to patients.

A. Motivation

Beliefs and attitudes

Several studies looked at pharmacists’ values, beliefs and attitudes toward practicing patient education in their pharmacies. Values are basic orientations, such as one’s view on the role of professionals and on patients’ autonomy. Beliefs are the more immediate views on the outcomes of patient education, which also includes one’s perceived social pressure to perform or not to perform the behavior in question, which is called subjective norms. Finally, attitude refers to one’s evaluated beliefs. Successively we will review studies about pharmacists’ beliefs and attitudes and studies about pharmacists’ subjective norms with respect to their patient education behavior.

A study among Australian community pharmacists revealed that pharmacists’ reported main reasons to counsel patients are patient oriented (correct drug use, patient compliance), while job satisfaction and improved patient relations were also reasons for patient counseling (108). Pharmacists’ opinions about patient counseling have also been studied among representative
samples of the Dutch and Swedish community pharmacists. In this study patient counseling has been described as pharmacist patient communication with the objective to support patients in realizing proper drug use. Table 2.7 lists the answers of both populations on the presented statements in the survey in decreasing order of their mean scores, including the T test scores concerning differences between both populations (1).

Table 2.7 Pharmacists’ beliefs about patient counseling (1)

<table>
<thead>
<tr>
<th>Statements about patient counseling</th>
<th>Swedish * Mean SD</th>
<th>Dutch ** Mean SD</th>
<th>T-test p=.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is your professional duty</td>
<td>4.7±0.6</td>
<td>4.4±0.8</td>
<td>3.42</td>
</tr>
<tr>
<td>Enhances patient compliance</td>
<td>4.4±0.7</td>
<td>3.9±0.9</td>
<td>5.75</td>
</tr>
<tr>
<td>Enhances job satisfaction</td>
<td>4.3±0.8</td>
<td>3.8±1.0</td>
<td>4.60</td>
</tr>
<tr>
<td>Contributes to patient’s welfare</td>
<td>4.1±0.9</td>
<td>3.9±1.0</td>
<td>NS</td>
</tr>
<tr>
<td>Customers demand it</td>
<td>3.3±1.0</td>
<td>3.4±1.0</td>
<td>NS</td>
</tr>
<tr>
<td>Enhances competitive position</td>
<td>-</td>
<td>2.7±1.1</td>
<td>#</td>
</tr>
<tr>
<td>Diminishes legal liability</td>
<td>3.3±1.1</td>
<td>2.4±1.0</td>
<td>8.51</td>
</tr>
<tr>
<td>Increases profits</td>
<td>-</td>
<td>2.3±1.1</td>
<td>#</td>
</tr>
</tbody>
</table>

* n= 267; ** n = 217 . Scale 1(extrem.insign) - 5 (extrem.signif)
- not listed in questionnaire; # not computed

The Swedish as well as the Dutch respondents were found to agree strongly with the presented items about patient counseling. The items about pharmacist’s responsibility in patient counseling and the statements about the effects of patient counseling on patient compliance and on pharmacist’s job satisfaction were found to receive the strongest agreement of the responding pharmacists. Only low (although significant) correlations, were found between some of the belief scores and pharmacists’ reported frequencies of verbal drug information given with prescription drugs and with OTCs (1).

In a multiple regression analysis Kirking found that pharmacists’ attitudes toward patient counseling was the major explanatory variable of pharmacists’ reported patient counseling activities about newly prescribed drugs (11). Fedder interviewed almost 200 pharmacists and found a low correlation between pharmacists’ role beliefs about and reported behavior in patient education (109). Ortiz found a low significant correlation (r=0.19, p<0.001) between pharmacists’ orientations towards patient counseling and their estimated numbers of patients who were counseled by them (13). As no information was included about the daily number of pharmacy visitors in the studied pharmacies, these results are difficult to interpret. Mason interviewed and observed 40 pharmacists and found a significant correlation (r=.54 p<0.001)
between pharmacists’ summed attitude scores and the extent to which they provided verbal instructions with new prescriptions (110). Zelnio interviewed 890 pharmacists and distinguished them in a service and a no service group. Among the so-called ‘service group’ a significantly higher attitude score was found compared to the ‘no service’ group (111). Besides, the ‘no service’ group also showed a significant higher score than the ‘service’ group on a question about their perceived skills to provide patient services.

We conclude that pharmacists’ beliefs and attitudes about patient education are related with their frequency of providing verbal drug information to patients. These beliefs and evaluated beliefs about patient education concern pharmacists’ professional responsibility in patient education and the outcomes of patient education on both patients as well as on pharmacists.

Subjective norms
Pharmacists’ subjective norms concern their evaluation of the opinions of important others on their behavior in patient education. Persons who may influence pharmacists’ behavior in this view are physicians, patients and colleagues. Studies that have paid attention to pharmacist’s subjective norms with respect to patient education mostly concentrated on physicians. At first studies will be reviewed about doctors’ views and reactions on pharmacists’ activities in patient education. Afterwards studies about pharmacist’s perceived social norms with respect to their behavior in patient education are reviewed.

Pharmacists’ activities into the area of patient education could result in the straining of interprofessional relationships. Doctors may be antagonistic toward expanded pharmacy roles in patient education because these activities may directly challenge their autonomy, authority, status or economic security. Moss et al studied doctors’ attitudes about pharmacists’ patient counseling on adverse drug reactions of prescribed drugs. They concluded that doctors’ acceptability was influenced by the kind of medication. Pharmacists’ participation in counseling was found to be most acceptable for antibiotics, anticoagulants and analgesics. Pharmacists’ participation seems to be least acceptable for doctors in the case of antipsychotics, cardiac glycosides and antianxiety agents (113). A more recent study found a lack of support among many doctors of pharmacists’ clinical role activities, such as patient counseling (114). These results are confirmed by the results of a recent study among 744 English general practitioners (GPs). Although 68% of the interviewed GPs agreed with pharmacists’ role in health education, only 44% agreed and 41% disagreed with pharmacists’ extended roles in counseling patients taking long term benzodiazepines (115). Swedish physicians were found to regard pharmacists as being incompetent for providing information about the positive and negative effects of lipid lowering drugs (116). Others found that doctors less agreed with pharmacists’ counseling of patients who have become dependent on drugs, compared to their counseling about drug instructions (117). Fedder et al experienced in their study about pharmacists’ involvement in patient counseling, that doctors most fear being taken unawares and as long as they know what is presented to their patients they are most supportive to pharmacists’ activities in patient education (109). Dutch general practitioners
Chapter 2

seem to have a more favorable opinion about pharmacists’ patient education activities, especially those GPs who perceive the pharmacist as being a drug information source to them personally (118).

Pharmacists may be aware of the influence of doctors’ opinions on their patient oriented activities, as was found in a survey by Zelnio and Nelson (111). In group interviews pharmacists reported a need for a more professional relationship with doctors and by this rather being encouraged to be involved in direct patient care rather than fearing reprisal (119). Only a few studies reported about the relation between pharmacists’ behavior and perceived social norms with respect to their patient education behavior. Mason found a significant correlation ($r=.44$, $p<0.01$) between the subjective norm and the observed number of verbal drug instructions, in a study among 40 community pharmacists (110). The subjective norm scores were based upon pharmacists’ perceptions of the normative pressure formed by doctors, patients, colleagues, the State Board of Pharmacy, pharmaceutical manufacturers and pharmacy professors. Kirking found that the subjective norm only explains one third as much variance as the attitude in the reported patient education behavior among employee pharmacists, though among pharmacy owners the subjective norm and attitude are of equal explanatory values (11).

We conclude that only a few studies looked at pharmacists’ behavior in patient education and the relationship with their perceived social norms in this respect. The results of these studies indicate that pharmacists’ perceived social norms are found to be related with their patient education behavior, although their attitude towards patient education seems to be more important in this respect.

B. Abilities

Pharmacists’ experienced (in)abilities for practicing patient education are reported in several studies. Ortiz asked 1361 pharmacists to indicate whether they agreed or disagreed with several listed reasons for deciding not to counsel patients. Although the pharmacists in most cases disagreed with the listed reasons against counseling there are a number of factors that could inhibit pharmacists from counseling. In decreasing order these pharmacists mentioned a lack of patients’ medical histories, a lack of patients’ feedback from and the presence of situations in which patient education may not be necessary (108). In a survey 708 Wisconsin community pharmacists reported several barriers to patient education among which a lack of time and a lack of privacy were mentioned most frequently (119). Meade studied pharmacists’ perceived problems of patient counseling and found a need for more time most frequently mentioned (58% of the respondents), followed by the disadvantage that patient counseling could make patients uncomfortable or nervous (3). These studies present pharmacists’ perceived barriers without studying their relationship with pharmacists’ behavior in patient education.
Only some studies looked at the relationship between the actual or perceived abilities (or barriers) to patient education and pharmacists’ behavior in this respect. One study looked at the influence of a private area on the duration and the quality of pharmacist patient conversation, based upon patients’ question asking and patients’ drug knowledge. Significant differences in the measured quality and duration of patient interactions were found between pharmacies with high and low privacy settings (120). Others looked at pharmacists’ informative behavior and pharmacists’ business, based upon the number and kind of prescriptions (new or refills) and incoming and outgoing phone calls, and found no significant correlations in this respect (20). Another study looked at pharmacists’ perceived skills to provide patient directed services. A significant difference in perceived skills was found among pharmacists who provide certain patient directed services and pharmacists who do not provide these services (111). No studies were found about technicians’ behavior in patient education and the factors related with this behavior. One may expect technicians’ behavior to be related with pharmacists’ instructions about patient education, as in a Dutch study among 73 hospital nurses a significant correlation was found ($r=.39, p<.05$) between the nurses’ perceived clearness about their roles in patient contacts and their patient oriented behavior (121).

One may conclude that the relationship between patient education behavior in community pharmacies and the abilities to practice this behavior has not been studied frequently. The only results that are of interest concern the positive influence of a private area in the pharmacy on pharmacists’ patient education behavior. Some reviewed studies reported pharmacists experienced time problems and privacy problems while practicing patient education, which may also apply to pharmacy technicians. In addition, technicians’ patient education behavior is expected to be related with pharmacists’ instructions about patient education in the pharmacy.

C. Positive experiences

As pharmacists’ and technicians’ motivation and abilities are expected to influence the development of their patient education behavior, their experiences with patient education may be involved in the persistence of this behavior. These experiences may consist of negative or positive feedback from others (patients, colleagues, physicians) and the outcomes of patient education on patients as well as on pharmacists and technicians themselves. We will review studies that concentrated on pharmacists’ or technicians’ experiences with patient education in relation with the persistence of their patient education behavior.

In one study pharmacists reported that a lack of feedback from people inhibits their patient counseling activities (108). In group interviews pharmacists indicate that several factors inhibit their involvement in patient education such as a lack of patients’ contacts and patients’ demands for counseling, a lack of physicians’ support and a lack of revenue as factors (119). Barnett found patients’ appreciation and compliance are some of the most important variables
associated with job satisfaction among pharmacists (2). Unfortunately no results were found about the relation between patients’ reactions and pharmacists’ patient education behavior. Patient education behavior of other professionals however has been found to be reinforced by support from colleagues, feedback of patients and visible results on patients’ health or selfmanagement and reimbursement (122).

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The results presented in table 2.8 demonstrate that pharmacists’ patient education behavior is found to be related with their beliefs, attitudes and subjective norms, which are the aspects that are studied most frequently. Fewer is known about pharmacists’ patient education behavior in relation with their abilities and experiences in this respect, while no results were found about technicians’ patient education behavior. The results about pharmacists’ behavior may also apply to pharmacy technicians, while technicians’ behavior is also expected to be related with pharmacists’ instructions about patient education. In interpreting the results of these studies one has to bear in mind that practical all of them have used pharmacists’ selfreported data. The results of observational studies are however limited by the small number of pharmacists who were observed, as it is known that pharmacists may considerable differ in their patient education activities.

**Conclusions**

Studies about pharmacists’ patient education behavior revealed a relationship with pharmacists’ beliefs about patient education. One may expect technicians’ behavior at the counter may also be related with their beliefs about patient education. Privacy conditions in the pharmacy seem also to be involved in the level of patient education activities. We did not find studies which looked at other aspects of practicing patient education. As a consequence we do not know to what extent pharmacists’ and technicians’ patient education behavior is
related with their subjective norms, their abilities and their positive experiences with respect to patient education activities.

2.6.3 Teaching patient education

As we are interested in the development of patient education in community pharmacies, we may learn from the experiences and results of institutes and persons that are involved in teaching health professionals about patient education. Several communication courses have been developed and been introduced in the pharmacy curricula and postgraduate programs in Europe and in the United States of America (123). To what extent have these courses influenced students’ or pharmacists’ knowledge, attitude, skills and behavior with respect to patient education? A review will be given of studies about the effects of communication courses on health professionals’ knowledge and attitude, on their skills and on their patient education behavior.

Effects on knowledge and attitude
A communication skills course for Welsh pharmacy students, consisting of 5 one hour lectures followed by 2 three hour sessions with small classes was found to increase students’ awareness of appropriate communication skills. The awareness test consisted of an analysis of the good and bad aspects of videotaped pharmacist patient interactions (124). Continuing medical education, consisting of 2 parts didactic sessions totalling five hours, has been found to increase physician’s knowledge about patient compliance (125). Green suggests that a training influences one’s beliefs about abilities, because recent graduates seem to have greater confidence in their educational effectiveness (126). Berger et al paid attention to the problem of communication apprehension (fear to communicate) among pharmacy students, and reviewed studies about the effects of courses addressed to communication apprehension. Communication courses and skills experiences were found not to decrease communication fear. A systematic desensitization program, based upon behavior therapy, was found to be the only effective method for decreasing students’ communication apprehension. They recommend students with communication apprehension should follow such a course before attending a communication skills course (127).

Effects on skills
Brown looked at the impact of a short communication course, which consisted of five one hour lectures and two three hour sessions. Although this course was found to increase students’ awareness of appropriate communication skills, it did not increase their social skills and communication skills, such as presented in role plays (124). Uhleman et al studied the effects of a microtraining and programmed learning training on the communication skills of 25 telephone hot line workers. The 16 hour microtraining consisted of training several skills
such as attending behavior, open ended questions, minimal encouragements, reflection of feeling and content and a role playing period. In the 16 hours lasting programmed learning training subjects first had to read a manual in each skill, followed by the microtraining and role play practice. Compared to a no training group both didactic methods were found to produce skill acquisition, as was measured in interviews at the end of the training. However during the 2 weeks afterwards only significantly higher empathy ratings were found in pseudo calls among the trained hot line workers. For all other variables the training effects were nonsignificant, which might suggest only a temporary overall effect for both kinds of communication skills training (128). Reviews of studies on teaching of medical interviewing found inconsistent results about the effects of instruction and training on students’ interview skills, as measured by various cognitive tests, affective instruments and observed behavior (129-130).

Effects on behavior
Smith found that pharmacy students who attended an elective course about contraceptive counseling showed increased counseling activities in community pharmacy practice compared to students who did not attend this course (131). In interpreting these results one has to bear in mind that this difference in behavior may also be due to differences in students’ attitudes towards patient counseling, as might be expected among attenders and non attenders of elective courses. A design with a pretest has to be used to evaluate the effects of education properly, like was done by Berardo (20). In this study pharmacists’ behavior was studied before and after attending a workshop in patient communication and only slight increases were found in the percentages of patients who received information with their medicines (from 21.5% to 24.2%), but the length of time spent with each patient and the amount of information given about medications increased significantly. These results are based upon a total of 176 hours of observation in 8 community pharmacies, which were collected during a two month pre-intervention period and a ten month post-intervention period (20).

The effects of teaching medical students or doctors have been studied frequently. A comparison of pretest and posttest collected audiotaped data showed that an 18 hour communication skills course only had small effects on the communicative behavior of the general practitioners involved (132). A similar study revealed small effects of a 2x4 hour patient education course on the informing behavior of 11 general practitioners (133). Maguire found no differences between the scores of interview skills trained doctors and those who were taught conventionally, such as observed in medical encounters with physical ill patients. But among psychiatric doctors the interviewing skills were improved, as measured directly and four years after they had followed a video feedback training in interviewing skills. The effect of video feedback training was most evident in clarifying patients’ statements using open ended questions and responding to verbal clues about patients’ problems. On only one skill, namely avoiding the use of jargon, conventional teaching was found to be as effective as video feedback training (134). Unfortunately this reference did not report about the
Patient education about drugs

Contents, methods and time-investment of the training and course concerned. A study among hospital nurses revealed only small effects of training counseling skills, the effects being tempered by the organizational structure of a nursing ward, especially the frequency and the quality of the internal communication and nurses’ perceived role clearness (121,135). Similarly research on implementing changes in nursing units showed that a failure of new approaches in health care often resulted from a discrepancy between requirements and implications of new approaches and unchanged social and organizational context (136). To what extent medical teaching influenced patients’ behavior was studied by Maiman et al. They found that continuing medical education, consisting of 2 part didactic sessions totalling five hours, increases the compliance enhancing behavior of doctors and resulted in improvement of mothers’ adherence to therapy (125). Bensing found an effect of a communication skills course on general practitioners’ emphatic behavior, although this was found not to increase patients’ talking about psychosocial problems (137).

A review about the effects of continuing medical education revealed that doctors’ improved competence is not regularly reflected in their habitual performance. The author states that several factors narrow the gap between competence and performance, including clear specification of standards, individual feedback on actual behavior and a professional environment conductive to the maintenance of high standards (138). Another review reported that most interventions addressed to communicative skills have shown promise for short term effects, but conclusion about the long term effects on patient provider interaction are limited (139).

Conclusions
Several studies demonstrate that training programs frequently fail to improve communication skills on the long term. Different reasons may be due to this phenomenon. One reason may be that the courses concerned mostly take only one or two days, which may be sufficient to increase the awareness of appropriate communication skills but is not adequate for changing people’s behavior. Other reasons may be that the objectives of a course differ from the evaluated effects, or that the didactic methods are not adjusted to the objectives of a course. Based upon the reviewed studies one may state that teaching health professionals to communicate effectively with patients will be most successful with the help of video feedback training and highly structured programs in which specific skills are identified. Whether the improved competence will be reflected in patient education behavior may depend on the extent to which the organizational structure, professional standards and positive feedback support the persistence of the new learned behavior.
2.7 Conclusions

2.7.1 Introduction

Studies about the communication between health professionals and patients have used different data to describe the current level of patient education about drugs. Most studies concentrated on providing drug information without paying attention to the communication between patients and health professionals. In this respect one may question whether these activities may be viewed as being patient education, as it is known that providing information may not be sufficient to influence people’s behavior.

Several studies used patients’ or professionals’ self reports, which may be influenced by respondents’ memories and perceptions of the delivered or received information as well as by respondents’ nature to provide socially desirable answers. In general results that are based upon self reported data show higher frequencies of providing drug information than results from observational data. Observational studies have collected audiotaped or videotaped data and analyzed these data with respect to the frequency and contents of the provided information. Less attention has been paid to the quality of the provided information such as the adjustment to patients’ informational needs, comprehensibility, correctness and the application of educational principles like individualization, feedback controls, and so on. This should be taken into account when conclusions are drawn about the quantity and contents of patient education about drugs in community pharmacies and in medical encounters. We will compare the reported activities of pharmacists and doctors with patients’ informational needs, such as expressed by their drug related questions addressed to different information sources. Based upon this comparison the question will be answered whether patients’ informational needs are adequately met in community pharmacies. In addition, in section 2.7.3 conclusions are drawn about the factors that are involved in pharmacists’ and technicians’ patient education behavior and about the effects of communication courses on this behavior.

2.7.2 Professionals’ activities and patients’ needs

Pharmacists’ activities

In Dutch community pharmacies the majority of the patients seems to receive a patient package insert when drugs are being delivered. As written information is found to be frequently misunderstood, verbal information is needed to explain and adjust the standardized written drug information. In the case of new prescriptions pharmacists reported to provide verbal drug information in most cases, whereas in the case of refills the majority of the patients do not receive verbal information. Verbally given drug information mainly concentrates on drug instructions while information about drug effects and side effects seems
to be less common. Similar results have been reported about patient education in community pharmacies in other countries.

Doctors’ activities
Patient education about drugs in medical encounters seems to concentrate on the same drug aspects as in community pharmacies. The drug information that is given by doctors mainly consists of drug instructions. Information about the other drug aspects, such as the drug effects and the drug side effects seems to be given in only a minority of the contacts between physicians and patients.

Patients’ needs
What patients want to know about drugs is studied frequently and in different ways, varying from studies that asked patients to rate the importance of different information aspects to studies that looked at patients’ drug informing behavior. In general patients’ surveys reveal that patients are interested in drug effects and side effects, besides their interests in how to use their drugs. Patients have a strong preference for receiving both written and verbal drug information. Their drug related questions addressed to doctors and pharmacies concentrate on drug instructions. It is a remarkable fact that patients’ questions addressed to drug information centers concern other drug aspects. When patients use telephone drug information centers, they most frequently ask questions about the side effects and effects of drugs. Analyses of patients’ reasons for calling these services, reveal that patients’ informational needs about drug information are only partly satisfied by the information they gained from their doctors and pharmacists.

2.7.3 Development of patient education

Studies about patient education behavior in the pharmacy concentrated on pharmacists’ behavior, whereas little attentions was paid to technicians’ behavior. These studies about pharmacists’ behavior demonstrated pharmacists’ beliefs about patient education is one of the variables involved in pharmacists’ behavior. Other variables of interest are pharmacists’ perceived or actual abilities and their beliefs about the opinions of other important persons (doctors, patients, colleagues) concerning their activities in patient education. Pharmacists indicate that they would like to receive reactions from patients and doctors with respect to their patient education activities, but no studies were found about the actual influence of these reactions on pharmacists’ behavior.

These different kinds of factors seem to be related with pharmacists’ behavior in patient education. Similarly these factors are expected to be involved in technicians’ behavior in patient education, although no studies have been found that concentrated on these professionals in community pharmacies. One may expect that pharmacists’ instructions are
also related with technicians’ behavior in patient education, as an influence has been found of perceived role clearness on nurses’ patient education behavior. In summary one may conclude that efforts to develop patient education in community pharmacy have to pay attention to pharmacists’ and technicians’ motivation and abilities to practice patient education (among which clear instructions about the new behavior), while positive experiences with patient education behavior are needed for its persistence. Communication courses addressed to health professionals however mostly concentrate on skills while less attention is paid to the attitude, perceived social norms and needs for positive reactions on practicing patient education. This contradiction may contribute to the inconsistent and negative results about the effects of communication courses on the behavior of health professionals. Apparently the implementation of patient education in health care practice cannot be realized by only teaching professionals in communication skills.

2.8 Research objectives

This thesis is based upon the discrepancy between patients’ informational needs about drugs and the current level of patient education in community pharmacies. Based upon this discrepancy and the lack of information about how to develop patient education behavior, the general objectives of this study concentrate on the determinants of technicians’ patient education behavior and on the interventions that are needed to develop this behavior.

In order to find out what interventions are needed and on which elements these interventions should concentrate, theories about individual behavioral change and about organizational innovation will be discussed in chapter 3. These theories will also be used to specify our research questions and to decide about the elements of the intervention program that will be applied to develop patient education in community pharmacies. This intervention program will be described in chapter 4, that also presents the methodological aspects of our study. In chapter 5 the results of this study will be presented, while their consequences are discussed in chapter 6.
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Patient education about drugs


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Patient education about drugs

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Introduction</td>
<td>13</td>
</tr>
<tr>
<td>2.2 Patient education in community pharmacy</td>
<td>13</td>
</tr>
<tr>
<td>2.2.1 Introduction</td>
<td>13</td>
</tr>
<tr>
<td>2.2.2 Written drug information</td>
<td>14</td>
</tr>
<tr>
<td>2.2.3 Verbal drug information</td>
<td>14</td>
</tr>
<tr>
<td>2.2.4 Conclusions</td>
<td>18</td>
</tr>
<tr>
<td>2.3 Patient education by doctors</td>
<td>19</td>
</tr>
<tr>
<td>2.3.1 Introduction</td>
<td>19</td>
</tr>
<tr>
<td>2.3.2 Verbal drug information</td>
<td>19</td>
</tr>
<tr>
<td>2.3.3 Conclusions</td>
<td>22</td>
</tr>
<tr>
<td>2.4 Patients’ questions about drugs</td>
<td>23</td>
</tr>
<tr>
<td>2.4.1 Introduction</td>
<td>23</td>
</tr>
<tr>
<td>2.4.2 Questions in community pharmacies</td>
<td>23</td>
</tr>
<tr>
<td>2.4.3 Questions addressed to doctors</td>
<td>25</td>
</tr>
<tr>
<td>2.4.4 Questions addressed to drug information services</td>
<td>26</td>
</tr>
<tr>
<td>2.4.5 Conclusions</td>
<td>29</td>
</tr>
<tr>
<td>2.5 Effects of patient education</td>
<td>29</td>
</tr>
<tr>
<td>2.5.1 Introduction</td>
<td>29</td>
</tr>
<tr>
<td>2.5.2 Effects on patients’ knowledge</td>
<td>29</td>
</tr>
<tr>
<td>2.5.3 Effects on patients’ behavior</td>
<td>32</td>
</tr>
<tr>
<td>2.5.4 Conclusions</td>
<td>34</td>
</tr>
<tr>
<td>2.6 Development of patient education behavior</td>
<td>34</td>
</tr>
<tr>
<td>2.6.1 Introduction</td>
<td>34</td>
</tr>
<tr>
<td>2.6.2 Pharmacists’ patient education behavior</td>
<td>35</td>
</tr>
<tr>
<td>2.6.3 Teaching patient education</td>
<td>41</td>
</tr>
<tr>
<td>2.7 Conclusions</td>
<td>44</td>
</tr>
<tr>
<td>2.7.1 Introduction</td>
<td>44</td>
</tr>
<tr>
<td>2.7.2 Professionals’ activities and patients’ needs</td>
<td>44</td>
</tr>
<tr>
<td>2.7.3 Development of patient education</td>
<td>45</td>
</tr>
<tr>
<td>2.8 Research objectives</td>
<td>46</td>
</tr>
</tbody>
</table>

REFERENCES

53