

DEVELOPING PATIENT EDUCATION

IN COMMUNITY PHARMACY

Lyda Th G Blom

# DEVELOPING PATIENT EDUCATION IN COMMUNITY PHARMACY

Het ontwikkelen van patiëntenvoorlichting in de openbare apotheek

(met een samenvatting in het Nederlands)

Proefschrift

Ter verkrijging van de graad van doctor  
aan de Universiteit Utrecht,  
op gezag van de Rector Magnificus Prof dr JA van Ginkel  
ingevolge het besluit van het College van Decanen in het openbaar te verdedigen  
op woensdag 7 februari 1996 des middags te 14.30 uur

door

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geboren op 18 april 1951, te Varik

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The research presented in this thesis was financially supported by the Praeventiefonds

Het in dit proefschrift beschreven onderzoek werd mede gefinancierd door het Praeventiefonds.

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Cover design : Catholijn Luteijn  
Dienst Grafische Vormgeving & Fotografie, Faculteit Farmacie

Printing : Elinkwijk BV, Utrecht

## CIP-DATA KONINKLIJKE BIBLIOTHEEK, DEN HAAG

Blom, Alyda Theodora Geertruida

Developing patient education in community pharmacy/Alyda Theodora Geertruida Blom.

Utrecht: Universiteit Utrecht, Faculteit Farmacie.

Thesis Universiteit Utrecht-With ref.-With summary in Dutch

ISBN 90-393-1492-6

Subject headings: patient education/ drug information/ community pharmacies

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# 1 INTRODUCTION

## 1.1 Introduction

This work concentrates on patient education about drugs. It's general objectives focus on the question how to develop patient education in community pharmacies, especially the verbal information about drugs.

Definitions of patient education in literature vary, but mostly include a patient related objective (knowledge, attitude, skills, behavior) and 'communication', being the instrument to realize these objectives. We have defined patient education about drugs as the communicative activities addressed to the patient, with the main objective to realize patients' proper drug use. In this view patient education activities about drugs may concern efforts to influence patient's knowledge, attitude or skills, as the ultimate objective of all these different activities concentrates on patients' drug use. For example a demonstration of a drug inhaler primarily emphasizes patients' skills, but the ultimate objective focuses on proper drug use.

Patient education nowadays gets a lot of attention in the different professions and institutes within the health care system, among which community pharmacies. This interest in patient education may have different backgrounds. One could advocate the necessity to practice patient education from several points of view, such as patients' rights to be informed, or patients' needs to have information, but also because patient education may contribute to patient compliance. These different backgrounds for patient education about drugs will be discussed in section 1.2. Patient education in community pharmacy is an innovation, perhaps in a stronger sense than it is in other professions. For this reason the (young) history of patient education in this field will be discussed in section 1.3. Attention is given to the support from the professional association of pharmacists to practice patient education in community pharmacy and the initiatives of individual community pharmacists in this respect, while also the basic and postgraduate education provided by universities and technicians' schools are discussed. This brief historical view offers some background knowledge to evaluate the current level of patient education in community pharmacies. Finally in 1.4 an introduction is given of the objectives of this study and the contents of this work.

## **1.2 The necessity of patient education about drugs**

### **1.2.1 Introduction**

Patient education is an instrument to support people to solve their health related problems. In this respect governments, professionals and patients are involved in patient education, each of them with different backgrounds. These different backgrounds to advocate patient education about drugs, will be discussed briefly. Successively attention will be given to patients' right to receive information (1.2.2), patients' informational needs about drugs (1.2.3) and patients' noncompliance with drug treatment (1.2.4).

### **1.2.2 Patients' right to receive drug information**

In the Netherlands legal requirements concerning patient information about drugs proceed from different regulations: the Medicine Supply Act, the Medical Service Contract Bill and the product liability regulations such as formulated in the Civil Code [1-3].

Until 1993 the Medicine Supply Act gave only a limited number of rules concerning the responsibility of pharmacists to inform patients about their drugs. These rules concerned pharmacist's duty to put drug label instructions on all prescription drugs and to enclose a patient package insert, when a complete manufactured package was delivered to the patient [1]. The Dutch Medicine Supply Act however was recently changed, as the European Economic Commission decided that from January 1993 in all drugs marketed in European Community a user leaflet should be enclosed or clear instructions should be printed on their packages [2]. In interpreting the consequences of this rule one should take into account that Dutch community pharmacies also deliver pharmacy prepared drugs, which do not have to be delivered with a patient package insert. The Medicine Supply Act describes in detail the contents of the patient package inserts of drug manufactures. All drugs produced by drug manufacturers should enclose a patient package insert or equivalent information on the package of a drug [1].

In addition to the Medicine Supply Act, one may expect pharmacists to be faced with the consequences of the Medical Service Contract Bill, which has been introduced in april 1995 [3]. This bill embodies several patients' rights, among which the right to receive information and the right to consent to a treatment. However, the Medical Service Contract Bill is explicitly not applicable to community pharmacists and concentrates on the relations between doctors and patients. This limitation has been experienced as rather disappointing by pharmacists [3].

With respect to patient education, the product liability regulations of the Civil Code have serious consequences for pharmacists. These regulations state that the pharmacist who

supplies drugs may be held liable for drug induced injuries that are related to the failure to provide complete and adequate drug information. To prevent this liability the pharmacists should include the manufacturer's patient package inserts, when supplying industrially manufactured drugs. Regarding drugs prepared in the pharmacy, community pharmacists should be conscious of the necessity to deliver adequate drug information in order to prevent product liability risks [1].

In conclusion one may state that in the Netherlands neither the Medicine Supply Act nor the Medical Service Contract Bill, but the product liability regulations of the Civil Code seem to have the most far reaching consequences for practicing patient education in community pharmacy.

The legislation regarding patient education about drugs in the Netherlands and in Europe concentrates on written drug information. In the United States of America however legal rules have also been formulated about the verbal information about drugs and the trend seems to be towards patient counseling as a standard of care in pharmacy practices [4]. Pharmacists' duty to counsel patients has been an issue in USA court cases since the 1930s. At least 40 states in the United States of America now have either a statutory or a regulatory requirement that pharmacists should counsel patients about outpatient prescriptions [5]. Since 1974 pharmacists of the state Washington have been required to explain orally and if necessary in writing to the patient or the patient's agent directions to assure proper utilization of the medication prescribed [6].

### **1.2.3 Patients' informational needs**

Different instruments may be used to find out whether patients want to be informed about drugs. One could ask patients about their drug interests or perceived lack of drug information, or ask health professionals about the perceived informational needs of their patients. Another possibility is to look at patients' drug informing behavior and to study the extent to which patients read patient package inserts and drug labels and what kinds of questions they ask about drugs. In interpreting the results of these studies one has to bear in mind that patients' interests may not always result in drug related questions addressed to health professionals. For different reasons patients may not ask questions when they meet their doctors or pharmacists. For example patients may feel anxious or reluctant to ask questions, or do not have any questions at the moment they receive their prescription drug or Over The Counter medication (OTC). So patients' informational needs may only partly result in drug questions in their contacts with doctors, pharmacists and drug information centers (as will be discussed in detail in chapter 2). In this section we will review studies about the knowledge, interests and priorities of patients concerning the different drug information aspects.

### Patients' knowledge

Patients' lack of drug knowledge has been shown in several studies. Ascione interviewed 187 patients who used cardiovascular drugs for at least 1 month and found the highest scores for knowledge of the drug regimen and of the drug purpose. Fewer patients were correct about the appropriate action for a missed dose and only 10% reported correct side effect information about the drugs they were taking [7]. A national pharmacy survey in the United Kingdom among 8831 patients who were handed out prescriptions drugs, revealed that 55% did not know exactly how they should take their medicines while 42.5% did not know how to cope if adverse reactions occurred [8]. Among 85 patients receiving cardio-respiratory drugs, only 16% remembered having been told about the duration of use and 8% about the adverse effects [9]. Among 99 chronic patients with advanced chronic lung disease, only 17% gave correct answers to the questions about the name, indication, appearance and dosage schedule of the prescribed drugs. In addition, nearly one third of all the patients could not properly answer any of these questions about their medication [10]. Patients' incorrect drug knowledge may be due to different kinds of failures of their communication with health professionals, which are listed in figure 1.1.

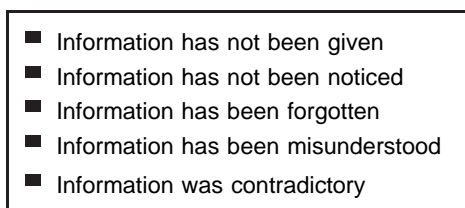
- 
- Information has not been given
  - Information has not been noticed
  - Information has been forgotten
  - Information has been misunderstood
  - Information was contradictory

Figure 1.1 Communication failures

### Patients' interests

There is considerable evidence that patients want to be informed about their drugs. Consumer surveys concerning pharmaceutical services almost all indicate that the respondents desire counseling from their pharmacists [11-13]. Patients want to be informed about the different drug aspects, including the drug adverse effects [14]. Most patients like to be informed both orally and written about their drugs [8,15,16]. Studies among Dutch populations also conclude that patients want to be informed written and verbally about several aspects of OTCs and prescription drugs, such as the dosage schedules and other instructions about drug use, the effects and adverse effects [17-21]. Studies among visitors of community pharmacies in the USA have shown that the public is even willing to pay for pharmacist's services in patient counseling [22]. Patient's interests in drug information is also demonstrated in reviews of patient satisfaction studies [23].

#### **1.2.4 Patient compliance**

Patient compliance about drugs may be defined as the extent to which patients follow the drug instructions given to them by different health professionals. Patient education is also advocated after examining the results of studies that report about the frequencies and consequences of patient noncompliance, which could have been prevented by patient education. Reviews of compliance studies conclude that failure to take medications properly occurs in more than 50% of the cases [24-31]. The drug errors made most frequently are patients' use of fewer or more than the prescribed drug dosages. Other frequently made drug errors are improper dosing intervals and wrong drug administrations [25,27,29-32]. Some drug applications, such as inhalers or eyedrops, in particular can cause drug errors [33-35]. Boyd found that 31% of the 380 prescriptions studied were misutilized in a manner that posed a serious threat to the patients' health [31]. Others found that 4-7% of all hospital admissions are the result of people's failure to follow the instructions about drugs [36-37].

Compliance studies frequently report the importance of patients' correct drug knowledge in preventing noncompliance [30-31,38-42]. Patients' incorrect drug knowledge and lack of motivation to comply with the drug instructions given to them, could be due to different pitfalls in their communication with health professionals such as listed in figure 1.1. Patient compliance requires patients' knowledge about drug instructions as well as patients' agreement with the necessity to treat their disease, but patients are found to disagree frequently with the prescribed drug treatment [38]. They have to be convinced of the necessity and benefits of the drug treatment in order to be able to be compliant [43]. This requires patients' involvement in the decisions about their drug therapies, which may be realized by communicating with patients about the different aspects of the proposed drug therapy.

#### **1.2.5 Conclusion**

For different reasons pharmacists and pharmacy technicians should be involved in patient education about drugs. Firstly, pharmacists will meet product liability problems if they dispense drugs without delivering the accompanying drug information. Secondly, patients nowadays want to be informed about the different aspects of the drugs they have to use and they want to receive written and verbal drug information. After all patient education is important in order to effect proper drug use and prevent noncompliance, as it is known that a lack of drug knowledge and motivation are the major reasons for noncompliance. In other words patients have to be informed about the drug instructions, their disease, the drug effects and drug adverse effects. Therefore, patients should be provided with information about their diseases and the necessity of drug therapy, while they also have to be informed about the drug instructions. The provision of drug information may however not be sufficient to overcome the

potential barriers for proper drug use and a personal contact may be needed to support patients in solving their drug problems.

### **1.3 Patient education: a new task of community pharmacists**

#### **1.3.1 Introduction**

We will briefly describe the young history of patient education in Dutch community pharmacies, in order to provide some background information that may facilitate the understanding of the actual level of patient education in Dutch community pharmacies.

Pharmacists' primary activity has always been oriented towards preparing and dispensing drugs rather than providing drug information to patients, which situation lasted until 1975. Before the year 1975 pharmacists were not allowed to deliver the package inserts of industrial drug packages to patients [1]. The introduction of pharmacists' duty to deliver the enclosed patient package inserts with industrial drugs in 1975, may be viewed as a starting point for patient education in community pharmacy. From 1975 on individual pharmacists as well as different organizations who are involved in drug production, drug distribution and pharmacists' education, have developed several activities and tools to support patient education in community pharmacy. We provide a short overview of these activities addressed to community pharmacists and about the educational activities of pharmacy schools and technicians' schools with respect to pharmacists' and technicians' expertise on patient education.

#### **1.3.2 The professional organization of pharmacists**

One of the first activities of the Royal Dutch Association for the Advancement of Pharmacy (the KNMP) addressed to patient education has been the development of patient education materials about drugs. Several written patient information materials have been developed to support pharmacists in their patient education activities, which are continuously kept up to date. In addition, audiovisual drug information has been developed with the objective to educate pharmacy visitors about drugs while they are waiting in the pharmacy [44]. Another patient education activity of the professional organization of pharmacists is the Drug Information Telephone Center for patients, which started in 1990 [45-46].

The professional association of Dutch pharmacists provides her members with professional standards about pharmaceutical care. These standards have been updated recently and include several patient education statements. Figure 1.2 lists the statements about the objectives of patient education and about the kind of drug information pharmacists should provide [47].

- Patient's interest and own responsibility are the basics of patient education
- The pharmacist supports the patient to take well-considered decisions about drug use
- The pharmacist creates real opportunities to provide a personal advice to the patient
- Advice about selfmedication are based upon standards about selfcare
- Verbal and written drug information are given about the characteristics of drugs and advice about proper drug use and other aspects which are related with patient's health

Figure 1.2 Pharmacists' standards about patient education [47]

The listed standards demonstrate pharmacist's responsibility in providing drug information about both prescription drugs and selfmedication. The standards also include aspects about the correctness, clearness and concreteness of the information given to patients. These kind of quality aspects of written drug information given to patients have also been discussed in the weekly magazine addressed to practicing pharmacists [48-49]. Also the quality of the verbal drug information given to patients in a community pharmacy has received attention in the pharmacists' magazine [50]. The standards listed in figure 1.2 have been developed recently and are to be introduced in pharmacy practice in the near future, by using peer review and accreditation.

In 1992 the association of Dutch pharmacists has described her views and planned activities with respect to pharmacists' position in the near future and emphasized the necessity of patient education in community pharmacy [51]. In 1994 the professional organization of pharmacists started a campaign which has the objective to improve pharmacists' image among the general public. This campaign was needed as it was found that consumers were not aware of pharmacists' activities in drug education [52]. In addition a working group developed standards about how to communicate with patients at the counter in community pharmacies [53].

Next to these activities of the professional association of pharmacists, groups of pharmacists have developed individualized drug letters in connection with their computerized medication control systems. These drug letters concern readable patient leaflets which include the selected information addressed to the individual patient. For example the letters addressed to male drug users do not contain extensive information about drugs and pregnancy or breast feeding, in contrast to the letters addressed to the female drug users [21,54].

### 1.3.3 Pharmacy schools and technicians' schools



At the two faculties of pharmacy in the Netherlands patient education was introduced in the curricula in the mid 1980s [55]. One may state that at the moment about 10% of the practicing community pharmacists were taught about patient education during their university period. The technicians' schools nowadays pay attention to patient education in their lessons about drug dispensing or in their lessons about people's behavior [56]. In addition to technicians' basic education, technicians' schools have developed drug information courses for practicing technicians, which include patient education subjects [57]. No results have been published about the percentage of technicians that has been taught about patient education during their school period or after they left school.

In 1985 the pharmacy schools have started postgraduate courses about patient education for practicing community pharmacists [55]. These one-day postgraduate courses concentrate on different patient education subjects and since 1993 on these courses are also available for technicians. Figure 1.3 lists the patient education courses which have been provided to practicing pharmacists and pharmacy technicians at the university of Utrecht in 1995 [58].

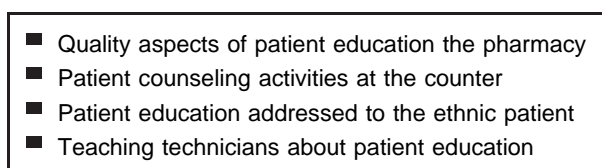
- 
- Quality aspects of patient education the pharmacy
  - Patient counseling activities at the counter
  - Patient education addressed to the ethnic patient
  - Teaching technicians about patient education

Figure 1.3. Postgraduate courses in patient education [58]

At the moment about 300 out of the 1500 practicing community pharmacists have followed one of these postgraduate courses about patient education. In addition to these postgraduate courses, pharmaceutical companies provide courses about patient education to pharmacists and technicians.

#### **1.3.4 Conclusions**

Several initiatives have been developed to support pharmacists and pharmacy technicians in their efforts to practice patient education in community pharmacy. Pharmacists and technicians are nowadays taught about patient education during their educational period, while their colleagues who received school education at an earlier date may attend the patient education courses which are provided by pharmacy schools, technicians' schools or by other organizations. In addition, patient information leaflets have been developed about individual drugs as well as about several drug groups, while the introduction of a computerized

prescription drug delivery system has realized a standardization of the drug instructions written on the drug labels. To what extent have these different activities been sufficient to support pharmacists and technicians in practicing patient education as one of their daily activities in community pharmacy practice? This question will be answered in chapter 2, which concentrates on the actual level of patient education about drugs in community pharmacies.

#### **1.4 This thesis**

This work deals with the development of patient education about drugs in community pharmacies. The first question to be discussed is whether there is a need for increased attention on patient education in community pharmacies. Therefore chapter 2 starts with an overview of the current level of patient education about drugs in relation with patients' drug questions and the effects on patients' drug use. Besides this, studies about the determinants and development of patient education behavior will be reviewed. Based upon this review the general research questions of this study will be presented in the last section of chapter 2.

Chapter 3 concentrates on behavioral and organizational change processes described in literature, in order to find out which individual and organizational variables are expected to play a role in pharmacists' and technicians' patient education behavior and how these variables can be influenced. Chapter 4 presents the research questions and research methodology of our study. As a quasi-experimental design was used, this chapter includes a description of an intervention program that was used to develop patient education in community pharmacies. We studied the effectiveness of this intervention program, while we also studied the determinants of patient education behavior. Chapter 4 also describes the dependent and independent variables that were studied and what kind of data collecting methods were used to answer our research questions.

The results of our study are presented in chapter 5. This chapter starts with the collected data about patient education activities in community pharmacies. Results are presented about the frequency and quality of the observed patient education activities. Chapter 5 also presents information about the pharmacy technicians who participated in our study. This chapter reveals the results about the determinants of technicians' patient education behavior and the results of the intervention program on patient education in community pharmacies.

Finally chapter 6 presents the conclusions of our study, which are discussed subsequently for their consequences regarding pharmacy practice and research into patient education about drugs.

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## **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's 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  $52.1 \pm 27.1\%$  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 2.1. Verbal drug information given to patients in community pharmacies

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

\* 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 pharmacies, 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 from 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 2.2. Verbal drug information given to patients by doctors

(Ref)	Published	%Inf	Data collection	Studied population
(16)	1974	66.1	interview	118 male patients
(16)	1974	83-86	interview	262 female patients
(8)	1982	51*	interview	1101 patients
(9)	1987	54-61	interview	1000 patients
(4)	1985	70	interview	400 patients
(36)	1983	>39	interview	247 patients 6 drugs
(41)	1986	68*	observation	413 patients 52 doctors
(40)	1991	>59	observation	607 patients 75 doctors

\* 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 acquaintanceship 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 2.3 Patients' questions in community pharmacies

Ref:	(44)	(45)	(46)	(47)
number of questions:	3743	767	204	1246
Information category	%	%	%	%
Dosage, administr	10.8	3.4	20.1	28.1
Indication, effects	22.8	19.2	23.5	8.7
Adverse effects	8.2	8.6	15.7	8.3
Drug interaction	4.0	6.3	↑	5.5
Drug recommendation	19.0	43.4	-	26.9
Drug comparison	9.7	1.9	13.2	-
Drug identity	-	-	7.9	5.1
Other aspects	25.5	17.1	19.6	16.6
Total questions	100.0	100.0	100.0	100.0

↑ = 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 not 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

<b>Information category</b>	<b>Number of questions (ref.nr)</b>	<b>1833 (62)</b>	<b>175 (63)</b>	<b>108 (64)</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Adverse effects	33.2	44	24.8	*
Dosage, administr	10.5	20	8.3	15.7
Indication, effects	18.0	*	*	15.7
Drug interaction	7.9	19	35.5	*
Contra indication, pregnancy	4.5	*	*	100.0
Drug identity/name	12.1	17	3.2	100.0
Other aspects	16.6	17	3.2	100.0
Unknown	3.2	*	*	100.0
Total	100.0	100.0	100.0	100.0

\* 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 2.5. Patients' reasons to call the drug telephone service (62)

<b>Reported reasons to call drug telephone service</b>	<b>(n=200)</b>
	<b>%*</b>
Indepent answer/second opinion	43.0
Instead of doctor	31.0
Instead of pharmacist	28.0
Convenience	7.0

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At home	5.5
Anonymous	3.0
Other reasons	11.5

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\* Percentages may not add up to 100% (different reasons might be mentioned)

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 its 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). Kinsey 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 find 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)

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

\* 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

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 ( $r=.39$ ,  $p\leq.05$ ) 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).

Table 2.8 Pharmacists' patient education behavior and related factors (\*)

Variable↓ Ref→	Significant correlation with pharmacists' behavior						
	(1)	(109)	(11)	(110)	(20)	(120)	(108)
role beliefs	+	+					+
outcome beliefs	-						
attitudes			+	+			
subj norms			+	+			
business						-	
private area							+

\* + = significant; - = not significant; blanc= not studied

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

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 conducive 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 attention 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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### 3 DEVELOPING PATIENT EDUCATION IN COMMUNITY PHARMACIES

#### Theories about individual and organizational change

#### 3.1 Introduction

This chapter concentrates on the development of patient education in community pharmacies from a theoretical point of view. The objective is to find out what individual and organizational variables are expected to be involved in pharmacists' and technicians' patient education behavior and how they are to be influenced. As pharmacy technicians are involved in the majority of all patient contacts, and pharmacists participate in only a minority of these contacts, we concentrate on the patient education behavior of pharmacy technicians. Patient education involves both the individual members as well as the social system in which these members interact and function. In other words, at one extreme our unit of interest is the individual technician and at the other the community pharmacy, being an organization. Therefore the general principles of individual behavioral change and organizational change are presented in sections 3.2 and 3.3. In section 3.4 these principles are translated into the consequences for the development process of patient education in community pharmacy.

#### 3.2 Theories about individual behavior (and change)

Many theories have been developed to understand and predict human behavior, which theories all try to identify the determinants of behavior. These theories differ in the extent to which they are based upon the cognitive element in people's behavior, include attention for the influence of the social environment on people's behavior and focus on changing one's behavior. In paragraph 3.2.1 we discuss two theories about individual behavior, which concern Ajzen's theory of reasoned action and Green's PRECEDE-PROCEED model. The interventions which may change individuals' behavior are discussed in paragraph 3.2.3.

##### 3.2.1 Ajzen's theory of reasoned action

The theory of reasoned action, which was called the Fishbein-Ajzen model originally, has been frequently used to analyze and predict patients' health behavior. In addition, studies about pharmacists' behavior have also used this model to analyze and predict pharmacists' patient counseling behavior [1-2]. This theory is based on the assumption that human beings are usually quite rational: people systematically use the information available to and consider the implications of their actions before they decide to engage in a given behavior. Therefore this theory is called 'a theory of reasoned action'. This theory states that the immediate antecedent of any volitional behavior is the **intention** to perform the behavior in question and they specify



two conceptually independent determinants of behavioral intention. One is a personal factor termed **attitude** toward the behavior and refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question. The second predictor of intention is **subjective norm**, which is a social factor that refers to the perceived social pressure to perform or not to perform the behavior in question [3]. Later on the model was extended with one's **perceived control** over behavior, being a determinant of intention as well as of behavior, corresponding to Bandura's self efficacy concept [4]. Perceived control refers to the extent to which a person feels to have control on the concerned behavior, and seems to be related to one's perceived abilities to practice this behavior. This later version of the theory of reasoned actions is presented schematically in figure 3.1.

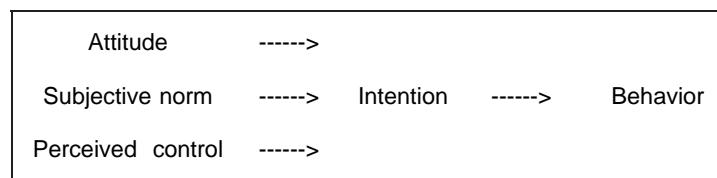


Figure 3.1. Aizen's model: determinants of behavior [4]

So one's behavior is to be predicted by one's intention, which in turn is a function of three basic determinants. The first determinant (attitude) is one's positive or negative evaluation of performing the behavior and may be viewed as a function of one's behavioral beliefs. The second determinant of intention (subjective norm) is one's perception of social pressure put on him to perform or not perform the behavior in question, and is a function of one's normative beliefs. The third determinant of intention is the perceived behavioral control and reflects people's confidence in their ability to perform the behavior [4].

### 3.2.2 The PRECEDE-PROCEED model

Green developed the PRECEDE-PROCEED model, which may be viewed as a framework to plan educational interventions. This model may also be useful to understand pharmacists' and technicians' behavior in patient education. PRECEDE stands for Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation. To accommodate the broader mandate of health education the original PRECEED framework has been expanded with the PROCEED concept, which stands for "policy, regulatory, and organizational constructs in educational and environmental development". Green's PRECEDE-PROCEED framework has been used frequently in attempting to understand the implementation of health education programs [5]. Green distinguishes three categories of influencing factors with respect to behavior, which are the predisposing, enabling and reinforcing factors (figure 3.2).

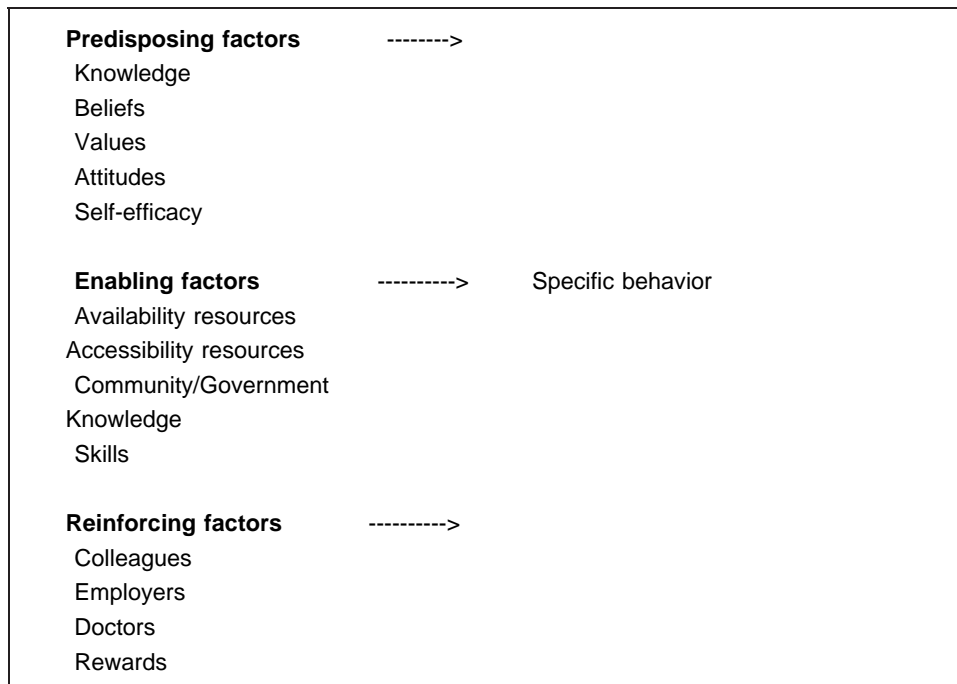


Figure 3.2. Green's PRECEDE-PROCEED model: determinants of behavior [5]

### Predisposing factors

Predisposing factors to behavior - which include knowledge, attitudes, beliefs, values and self-efficacy - provide the rationale and motivation for practicing this behavior. **Values** include basic orientations, such as one's view on the role of the professional or the patient's autonomy. **Beliefs** include the more immediate viewpoints of professionals on the matters such as the effectiveness of patient education and its patient and profession directed outcomes. **Attitude** towards a behavior may be viewed as the evaluated beliefs about the concerned behavior, including the evaluated abilities to realize this behavior. **Self-efficacy** is a perception of one's own capacity for success in practicing the new behavior and is a concept from Bandura's social learning theory. Self-efficacy is found to be a significant determinant of performance that operates partially independent of underlying skills [6]. The relationships between behavior and constructs such as attitudes, beliefs and values give ample evidence of their association [5].

### Enabling factors

The predisposing factors account for one's motivation and self-confidence regarding patient education. But even with motivation and high self-confidence, professionals sometimes fail to take the appropriate action because they lack the necessary knowledge, skills and resources

to do so. The actual knowledge and skills differ from the predisposing self-efficacy in that they are real deficits and not just a lack of confidence. In other words, one's perception of one's own knowledge and skills is a predisposing factor to activities while the competence (available knowledge and skills) enables these activities.

### **Reinforcing factors**

While motivation and abilities influence the development of new behavior, reinforcing factors are involved in the persistence of the new behavior. Reinforcing factors may be distinguished in external factors (rewards, social support, feedback) and internal factors (self-efficacy, outcome expectancies).

### **3.2.3 Changing individuals**

The discussed theories about the individual behavior also refer to the interventions which may be used to develop new behavior. Similarly others postulate several statements about interventions and developing new behavior, like Bandura with his review of the social learning theory [6]. We list the different remarks concerning interventions addressed to individuals, which have the objective to realize new behavior.

#### **Diagnosis**

The determinants of a behavior have to be known before interventions can be properly developed. If the causes of a behavior can be understood, one can intervene with the most appropriate and efficient combination of education, training and resource development to influence the factors that predispose, enable or reinforce the behavior. An intervention linked to a diagnosed problem has the greatest chance of success. Therefore an individual approach of assessing the educational needs of pharmacists and pharmacy technicians will be most successful, when efforts are made to develop patient education in a community pharmacy.

#### **Planning**

Green states there is a precedence in the sequence of interventions which are intended to influence behavior. Predisposing factors are in place before intervening the enabling factors and enabling factors have to be addressed before intervening the reinforcing factors. According to Green's PRECEDE-PROCEED concept the next sequence of interventions (and addressed factors) has to be preferred: education (attitude), counseling (self-efficacy), training (skills), resources (staff, materials), feedback (patients, physicians, colleagues, teachers). In other words, a communication skills course will be most successful when the participating pharmacists and technicians have a positive attitude toward patient education and at a

pharmacy level sufficient resources are present to practice the new learned skills. Similarly there is little point in setting up a reinforcement system if technicians have not been educated to perform patient education behavior.

### **Stepwise change**

When people experience success in using what they have learned, this increases their outcome expectancies and perceived self-efficacy with respect to the concerned new behavior. This may be achieved when newly acquired skills are first tried in a situation likely to produce good results, and afterwards extended to the more difficult situations [6]. Repetition of the performance increases one's self-efficacy, which affects task performance, which in turn promotes behavioral change [7]. Therefore a communication skills training should start with the more simple patient contacts in the pharmacy, which may be expanded stepwise to the more complicated contacts at the counter. Similarly this stepwise development should be taken into account when new patient education activities are planned in the pharmacy.

### **Teaching methods**

When planning the teaching methods one has to consider the prior and concurrent learning experiences, as learning does not occur in a vacuum. To affect technicians' and pharmacists' behavior, the interventions must be planned in a sequence that takes into account prior and concurrent learning experiences to which they are exposed. This concerns both what they have learned from others (at school, university, postgraduate) as well as what has been learned from own experiences in daily community pharmacy practice. The consequences are that communication skills courses should concentrate on the subjects which are frequently discussed in pharmacy patient contacts. Besides role plays and video feedback have to be carefully introduced to pharmacists and technicians, as most of them do not have any experience with these instruments of communication skills courses.

### **Observational learning**

The capacity to learn by observation enables people to expand their knowledge and skills on the basis of information exhibited and authorized by others. If new behavior has to be learned, potential adopters may be informed and motivated by competent models who impart the necessary skills. The Social Learning theory states that modeling frequently occurs in interpersonal networks [8]. Modeling produces significant improvements of behavior, but the addition of guided enactment was found to increase the effects [6]. Videotaped modeling serves as a convenient aid to actual demonstrations of new behavior and is frequently used in communication courses. In addition, observational learning may also be useful in a community pharmacy, if the pharmacist is able to act as model to technicians. Therefore

efforts to develop patient education in community pharmacies should seriously pay attention to pharmacists' expertise in practicing patient education.

### **Reinforcement**

The social learning theory states that individuals whose behavior is expected to change, should experience direct advantages of the new behavior. These advantage may concern the effects of the new behavior, or in the case of delayed effects, current incentives to sustain adoptive behavior until its intrinsic value becomes apparent [6]. As health professionals may not experience directly the effects of patient education, other incentives may be necessary to motivate them to continue patient education, like promotion, raise in salary, education or feedback from superiors or colleagues [9]. Peer feedback among physicians was found to improve compliance with recommended standards of care, while this factor also played an important role in sustained quality assurance [10, 11]. The feedback principle seems to be useful within the pharmacy team, and therefore interventions addressed to patient education should also pay attention to pharmacists' and technicians' feedback skills.

### **Participation**

Innovations are best introduced in settings where members are willing to try them out, at least at a provisional basis [6]. Attempts to change professional behavior will be more successful if professionals participate in identifying their own needs for change and in selecting the methods that will enable them to realize this change, as was found in studies among doctors [12-14]. This means that efforts to improve patient education in community pharmacies have to be based upon pharmacists' and technicians' views on the desired level of patient education and their agreement with the interventions which will be used (teaching methods, supervision, experiment).

### **Strategies**

The wide variety of strategies to influence people's behavior all represent one of the basic strategies originally suggested by Chin and Benne [15]. These authors distinguish three basic strategies for affecting people's behavior, which are the empirical rational strategies, the normative re-education strategies and the power strategies. The major differences between these approaches lie in the assumptions about the sorts of pressures to which potential adopters are most responsive (and -so- when each approach is advocated) [16].

The **empirical rational** approaches, also called persuasion strategies, assume that people are rational and will behave in whatever can be shown to be their own interest. Principles of these strategies are used in advertisements as well as in politicians' election campaigns. A second group of strategies are the **normative re-educative** strategies, which are based upon

the assumptions that one's motivation to adopt an innovation is not only built upon rationality and intelligence, but also influenced by the extent to which persons are tempted to change their normative orientations to old patterns and develop commitments to new ones. The re-educative strategies differ from the empirical-rational strategies, as they involve changes in attitudes, values, skills and significant relationships, and not just changes in knowledge, information, or intellectual rationales for action and practice. This strategy has to be preferred in case of the introduction of innovations which require different normative orientations of persons, such as changes in patient care [17]. Finally, the **power strategies** assume that those with less power, of whatever type, will usually comply with the changes advocated by those with greater power. These strategies can bring about significant changes as long as the real power is present. When the behavior can not be readily observed in order to administer rewards or punishments, it could prove counterproductive to use a power approach.

### 3.2.4 Conclusions

Based upon the theories that have been discussed in section 3.2.2 one may classify the determinants of behavior into three groups, which are people's **motivation** with respect to the new behavior (role beliefs, expectancies of patient outcomes and professional outcomes, perceived self-control and self-efficacy) their **abilities** to practice this behavior (knowledge, skills, resources and opportunities) and their positive **experiences** with the new behavior. These determinants of patient education behavior need attention when efforts are made to develop patient education in community pharmacy.

Patient education may be viewed as an innovation which reflects one's values about the professional responsibility and about patients' autonomy. Based upon these characteristics of patient education the normative re-education strategies seem to be the most adaptable for developing patient education in community pharmacies. These strategies attempt to introduce changes in behavior by first creating the necessary motivation for change, after which the acquisition and stabilization of the new behavior can take place. One of the principles of the individual change process listed in section 3.2.3, states that an intervention program has to apply to the specific individual learning needs. So decisions about the interventions to influence technicians' and pharmacists' determinants with respect to patient education, have to be based upon their individual learning needs, their learning experiences and their participation in the intervention program. The consequences are that an intervention program addressed to patient education in community pharmacy, may differ from pharmacy to pharmacy.

## 3.3 Theories about organizational change

### 3.3.1 Introduction

Originally theories about organizational change were based upon two research traditions [18]. The first was the work of Lewin, who developed one of the earliest stage models which has three stages: unfreezing-moving-refreezing and emphasized factors resisting change efforts. Lewin looked at individual behavior as being influenced by the characteristics of the individual coupled with the surrounding environment. The works of Argyris, MacGregor and Likert are examples of Lewin's influence [18]. The second influence on organizational change theories was the diffusion-innovation theory of Rogers which in the mid 1950s focused on how individuals such as farmers, teachers and doctors adopted innovations [19]. An innovation is any idea, practice or device that is perceived by people to be new. Rogers introduced the word "innovativeness", being the degree to which an individual is relatively earlier in adopting new ideas than other members of his social system, and distinguished 5 categories of innovators: innovators, early adopters, early majority, late majority and laggards [19].

Later on innovativeness has been related to organizations and described as being the degree to which an organization accepts an innovation rather easily [20]. In addition, the characteristics of innovations have been studied and have been found to be important variables that help explain people's responses to it. Zaltman, Duncan and Holbek reviewed the literature and identified several variables of innovations which influence its acceptance, such as the required skills and resources, return on investment, efficiency, risk and uncertainty, communicability, compatibility with prevailing social norms and value systems, complexity, perceived relative advantage, impact on personal relations, and the like [21]. These various attributes of an innovation can be reduced to one basic question: the benefits of an innovation have to be greater than its costs.

As research on organizational changes increased, two types of studies resulted. One category examined the characteristics of innovative organizations, by gathering cross sectional data from a large sample of organizations. The second type, which started in the mid 1970s, were studies which focused on the nature of the innovation process and the behavior of organizations in the process of change. These latter studies led to the development of Stage Theories and Organizational Development Theories [18]. Stage Theories are so named because organizations pass through a series of steps or stages when an innovation is introduced and each stage requires a unique set of strategies. The Organizational Development Theories concentrate on the different interventions aiming at either the organization's design, technologies or human processes [18]. Based upon these different theories about organizational change, we discuss the stages of innovation processes in organizations (3.3.2), the innovative capacity of an organization (3.3.3) and the principles of organizational change (3.3.4). The conclusions of this section will be presented in 3.3.5.

### 3.3.2 Stages of innovation processes

Zaltman, Duncan and Holbek proposed one of the earliest stage models to be applied to organizations and stated that an organizational change process consists of two general stages: the initiation and implementation of an innovation [21]. Originally research about the introduction of innovations concentrated on the degree of acceptance of new ideas or products among people, which was called the initiation stage afterwards. Later on it was Bennis who paid attention to the integration of an innovation into an organization and so introduced a second stage, concerning the implementation of innovations [22]. The initiation stage is concerned with how the organization becomes aware of an innovation, forms attitudes and makes decisions about the innovation. The implementation stage concerns the process of integrating the change into the organization. Both the initiation stage and the implementation stage are subdivided into different substages [19, 21]. Figure 3.3 presents the stages of the innovation process such as presented by Zaltman and Duncan [21].

Stage I. Initiation	Stage II. Implementation
Knowledge awareness Attitude formation Decision to adopt	Initial implementation Continued sustained implementation

Figure 3.3 Stages of the organizational innovation process [21]

The initiation stage has three substages, leading up to the decision whether or not the innovation will be adopted. The implementation stage is subdivided into the initial implementation stage, and the continued sustained implementation stage. These and other formulations of the stages of change are based upon the assumption that the innovation decision process is rational and follows a logical sequence of steps, namely from problem recognition, through assessment of alternatives, to adoption and implementation of a solution [23]. The various models all have in common that the different stages occur in sequence [18].

Compared to the innovation-decision process of individuals, the innovation process in organizations consists of similar substages but is much more complicated as a number of individuals is involved, each of whom plays a different role in the decision process. The innovation process in an organization may move slowly or rapidly and may even backtrack as previously unrecognized problems are revealing. Usually the innovation process stages occur in the expected time order if an innovation is imported from external resources. As an innovation originates within the organization, the stages of the innovation process seem to appear muddled and overlapping [20].



### **3.3.3 The innovativeness of organizations**

Rogers looked at the organizational variables associated with the innovativeness of an organization and found that several characteristics facilitate or impede change and so influence the innovative capacity of an organization [19]. These organizational variables are the complexity, formalization and centralization of an organization and the individual leadership within the organization. These organizational characteristics will be discussed in terms of how they affect the change process and to what extent this may have consequences for developing patient education in community pharmacies.

#### **Complexity**

Complexity is defined in terms of the number of occupational specialties in the organization and their professionalism, and a very differentiated task structure. It appears that the complexity of the organization can have both positive and negative effects on the various stages of the change process. At the initiation stage, highly diverse organizations are able to produce a variety of information and ideas that can increase the awareness and knowledge of change and the need to implement it. However, because of potential conflicts, on the implementation stage high complexity makes it difficult for the organization to actually implement the change. A community pharmacy might be viewed as a rather low complex organization. Although pharmacy technicians and pharmacists differ in their occupational activities, both groups participate in the same kind of activities. The low level of complexity of a community pharmacy requires extra attention at the initiation stage where a lack of ideas about the innovation may arise, while fewer problems may be expected at the implementation stage.

#### **Formalization**

Formalization is concerned with the emphasis that is placed within the organization on following specific and rigid rules and procedures in performing one's job. High formalization may prohibit organizational decision makers from seeking new sources of information, while low formalization seems to facilitate the initiation stage. On the other hand high formalization facilitates the implementation stage, because it tends to reduce ambiguity and potential conflicts that individuals would experience as they implement the change. The seriousness of making and dispensing drugs requires strict rules in community pharmacies, because of the necessity to prevent any mistakes. This situation may lead to high formalization in the pharmacies and inhibit innovations like patient education at the initiation stage. At the same time a high level of formalization may facilitate the implementation stage of the innovation process.

**Centralization**

Centralization is the degree to which power and control are concentrated in the hands of relatively few individuals. The greater the hierarchy of authority and the less the participation in decision making that exist in an organization, the greater the centralization. A low level of centralization increases the information available to the organization and thus increases the knowledge-awareness at the initiation stage. However when the organization gets at the implementation stage, a more specific line of authority and responsibility is required to reduce the role conflict of ambiguity that might accompany implementation of the change. Based upon the differences in responsibility between pharmacists and technicians, one may expect a certain level of centralization in community pharmacies. Therefore, efforts to introduce patient education in community pharmacies should pay attention to the information gathering process at the initiation stage, in order to achieve the required level of knowledge and awareness about patient education among the pharmacists and pharmacy technicians involved.

**Leadership**

Hage states that the motivation for innovation within organizations is critically influenced by the values of the executive leadership. Those executives who are committed to maintain and enhance high standards of performance in their organizations and who are dissatisfied with the status quo, will direct energy and resources toward importing new ideas and programs [23]. In other words, the motivation of pharmacists to spend time and energy in the development process of patient education will influence the innovative capacity of the pharmacy with respect to the development of patient education. In addition, the leadership of the pharmacist is important as this may influence the internal communication patterns in the pharmacy. In a study about nurses' patient directed behavior, the perceived frequency and quality of the internal communication was found to affect nurses' behavior [24, 25]. Others confirmed the influence of the internal communication patterns on the innovativeness of organizations [22].

**3.3.4 Changing organizations****Strategy**

According to the discussed strategies to change individual behavior the empirical, re-educative and power strategies are to be used to realize an organizational change. One of the conclusions in section 3.2 is that the re-educative strategy has to be preferred to develop patient education in community pharmacies. A specific example of re-educative strategies is Lewis' so-called action-research, which is based upon a collaborative relationship between researchers, educators and adopters of the innovation. This strategy is to be preferred when the objectives of an organizational change are not limited to the introduction of an innovation, but also include the improvement of the problem solving capabilities of an organization.

Another important aspect of strategies about changing organizations is the planning principle that states that an organizational change will be realized with more success, when a planning is made about its objectives, target groups, necessary preparation, implementation and evaluation [17].

### **Facilitating conditions**

It is suggested that three prerequisites are necessary for a successful implementation of an innovation: (1) availability of a sufficient level of expertise and knowledge to practice with the innovation, (2) clarity and specificity of the new tasks the staff members are to perform and (3) availability of equipment, materials and supplies [23]. A major cause of failure in changing organizations seems to arise from the difficulty of articulating concrete and specifically defined sets of skills and tasks from broad ideological statements and belief systems. Pharmacists who want to start new patient education activities therefore have to prepare their technicians adequately, have to define clearly the objectives and contents of these activities and have to take care of the necessary equipment, materials and supplies. In addition, correspondent changes may include modifications of authority and supervisory relations and internal communication patterns. When a new program calls for autonomy in task performance, staff members cannot function adequately if their work is structured by hierarchical authority, vertical communication patterns and rigid coordination mechanisms [23]. One may expect these conditions to be involved in the introduction of patient education in pharmacies. Patient education in community pharmacy may be viewed as a rather new activity which requires new role definitions with increased task autonomy, compared to the traditional activities of preparing and dispensing drugs. This increased task autonomy may be expected to come about as patient education requires technicians to interact with patients without pharmacists' immediate supervision.

### **Coping with resistance**

A major source of resistance toward an innovation may be expected from those in the organization who fear losing rewards, being denied access to the inducements of the new program or disturbing existing power relations. Often the success of new programs depends on the compliance of lower-level staff in direct contact with clients. This can undermine the innovation process, even when it has been sanctioned by the executive leadership. To achieve active compliance among staff members, they have to be provided with direct incentives to support the innovation. As technicians' behavior can be observed by patients as well as by colleagues and pharmacists one may expect resistance towards new activities in patient education. Technicians may fear to fail in patient education or existing personal relations may change when introducing a new task that requires certain knowledge, skills and organizational opportunities. Attention should be paid to this resistance as the willingness of pharmacy

technicians to participate in the innovation process is essential to achieve the required level of motivation for patient education. This confirms the necessity of using a re-educative strategy to develop patient education in community pharmacies.

### **3.3.5 Conclusions**

Studies about organizational change differ in the topics on which they concentrate, which may concern the organizational characteristics to be influenced, the planning process and stages of the innovation process and the appropriate strategy to achieve the desired organizational change.

The organizational characteristics that may be influenced in order to support an innovation process, concern the structure as well as the culture of an organization, among which the style of leadership and internal communication patterns. Whether all these aspects have to be influenced, depends on the characteristics of the innovation, the organization involved and the opportunities to influence the organizational characteristics.

The planning principle states that an organizational change will be realized with more success, when a planning is made about its objectives, target groups, necessary preparation, implementation and evaluation [17]. The theories about stagewise development of organizational change state that innovation processes consist of an initiation stage and an implementation stage, each of which consists of substages and requires different interventions in order to be adequately passed. The first stage is the so-called initiation stage and concerns the acceptance of the innovation while at the second stage (the implementation stage) the innovation is put into practice. Both stages require specific interventions, which at the same time also depend on the characteristics of the innovation and the organization involved. Different strategies may be used to introduce and support the innovation process within an organization. A specific strategy of interest concerns Lewis' action research strategy, which is based upon a collaborative relationship between educators (which at the same time are researchers) and the adopters of the innovation. This strategy has to be preferred when the objectives are not limited to the introduction of the innovation but also include the improvement of the problem solving capacities of the organization.

As community pharmacies are expected to be rather centralized organizations, with a high level of formalization and a rather low level of complexity, the introduction of patient education as a non-radical innovation, may need serious attention and time investment at the initiation stage while at the implementation stage fewer problems are to be expected. The consequences are that in a pharmacy team the discussion about the objectives and necessity of developing patient education need considerable attention before new activities can be put into practice. The presence of any resistance among pharmacy technicians to efforts to

develop patient education may also have consequences for the contents and time table of the innovation process. In order to respond adequately to this resistance, technicians' participation in the discussions and decisions at all stages of the innovation process is necessary. In addition, pharmacist's leadership is expected to influence the innovativeness of a community pharmacy. Pharmacist's willingness and expertise to develop patient education may be viewed as necessary conditions for introducing new activities in the pharmacy, while the pharmacist is also expected to create the necessary task autonomy and internal communication patterns which facilitate the process of implementing patient education in a community pharmacy. As the intervention period is limited in time the objectives of the intervention program also include the improvement of the problem solving capabilities of the pharmacy team. Therefore the action research strategy has to be preferred. This strategy is one of the re-educative strategies and is based upon a collaborative relationship between educators (who at the same time are researchers) and the adopters of the innovation.

### 3.4 Consequences for developing patient education

#### 3.4.1 Variables to be influenced

Theories about individual and organizational change state that both individual variables and organizational variables influence the change processes within organizations. As patient education concerns the individual pharmacist and technician as well as the pharmacy as an organization, both kind of variables may be involved in the development of patient education in a community pharmacy. Figure 3.5 presents an overview of these individual and organizational variables which are expected to influence innovation processes in community pharmacies (figure 3.5).

Individual variables	Organizational variables
Motivation (values, beliefs, attitude)	Leader's expertise (innovation and management)
Abilities (individual and organizational)	Internal communication patterns
Reinforcing experiences (rewards and feedback)	Complexity, formalization, centralization

Figure 3.5 Innovation processes in community pharmacies: variables involved

The variables listed in figure 3.5 are expected to have an influence on the innovation process of developing patient education in the pharmacy. In other words the extent to which a pharmacy will be successful in developing patient education is expected to depend on both the individuals working in a pharmacy and the characteristics of the pharmacy as an

organization. Therefore efforts to develop patient education have to take into account both kinds of variables, in order to facilitate the innovation process. The organizational variables that concern the structure of the pharmacy (complexity, formalization and centralization) cannot be easily changed. They nevertheless may influence the outcomes of an intervention strategy addressed to patient education and should be considered when evaluating interventions.

The individual variables seem to be more suitable to be influenced by an intervention program which has the objective to develop patient education in a community pharmacy. These individual variables may be distinguished into the variables which are related with technicians' and pharmacists' individual behavior in patient contacts on the one hand and with pharmacist's expertise in both patient education and managing the innovation process on the other hand. Pharmacist's expertise in patient education is needed to be able to supervise pharmacy technicians in patient education and to act as a model for technicians. Besides, the pharmacist has to support and supervise technicians at the different stages of the innovation process, which may require several management skills. Therefore efforts to develop patient education should concentrate on both the expected determinants of the individual patient education behavior as well as on pharmacist's expertise in patient education and on pharmacist's management skills. Figure 3.6 presents an overview of these different variables.

<b>Determinants of behavior</b>	<b>Variables to be influenced</b>
Technician's motivation	Beliefs about professional responsibility Beliefs about patient education outcomes Beliefs about own expertise in patient education Beliefs about social norms
Technician's abilities	Drug knowledge Communicative skills Organizational resources and opportunities
Technician's experiences	Experiences with practicing patient education
Pharmacist's leadership	Expertise in patient education and management

Figure 3.6. Patient education: individual variables to be influenced

In conclusion one may state that interventions have to be addressed to the variables listed in figure 3.6, which influence pharmacist's and technician's patient education behavior as well as to pharmacist's expertise in managing the innovation process in the pharmacy.

In addition one should consider differences among pharmacists in the adoption of patient education activities in their pharmacies. According to Rogers' diffusion curve different groups of pharmacists are to be distinguished with respect to the process of adopting patient education behavior [19]. The first half of all adopters, consisting of the so called innovators and the early adopters are considered to be the most deliberate in their actions and issues of benefits and costs are important in their decision to adopt. To the second half of all adopters, consisting of the late majority and the laggards, social influences are known to be more important in changing people's behavior [26].

### 3.4.2 Stages of the innovation process

The hierarchical principle of learning requires an educational intervention strategy which is based upon a step-wise development. This step-wise development of patient education starts with pharmacists' and technicians' attitude toward patient education and their perceived expertise, followed by the acquisition of required knowledge, skills, resources and opportunities to practice patient education, and finally reinforcing the new behavior. In addition, the educational activities also have to fit well within the stages of organizational change processes as mentioned in section 3.3. Based upon these stages we have planned the organizational and individual change process with respect to the development of patient education in community pharmacies (figure 3.7).

<b>Organizational change process</b>	<b>Individual change process</b>
Knowledge-awareness	Motivation
Decision and Planning	Abilities
Initial implementation	Positive experiences
Sustained implementation	Sustained behavior

Figure 3.7 Stages of organizational and individual change process

Based upon these stages of the individual and organizational change process we have developed an intervention program which will be discussed in detail in chapter 4.

### **3.4.3 Intervention strategy**

Patient education may be viewed as a non-radical innovation in a community pharmacy, since pharmacists and technicians are already involved in patient contacts and patient education. As community pharmacies are expected to be organizations with a high level of formalization and centralization and with a rather low complexity, serious attention must be paid to the first stage of the innovation process of developing patient education, the so called initiation stage. At this stage the organization becomes aware of the innovation, forms attitudes and makes decisions about the innovation. At this stage resistance toward patient education or toward changes may arise, and needs serious attention in order create the necessary motivation to develop patient education in the pharmacy. When interventions are on a temporal base, they should concentrate on the problem-solving capacities of the pharmacy team, as the pharmacy team has to proceed with patient education afterwards. In addition, one should take into account that the success of an intervention program which is based upon pharmacists' and technicians' voluntary participation, also depends on their agreements with the contents and educational methods of the interventions. Therefore the development of patient education has to be based upon a collaboration between the pharmacy-team and the change agents, and at all stages of the innovation process technicians and pharmacists should participate in the decision-making processes and the information-exchanges.

Based upon these characteristics of patient education and on the conditions of an intervention program, the action research strategy seems to be most successful to develop patient education in community pharmacy.





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## **4 RESEARCH METHODOLOGY**

### **4.1 Introduction**

This chapter presents the methodological aspects of our study. First paragraph 4.2 presents the research questions and the design which has been used to study these questions, including the methodology which has been chosen. In paragraph 4.3 the intervention program which has been used to develop patient education in community pharmacies will be described. Information about the studied population of pharmacists and technicians will be provided in paragraph 4.4. In addition paragraph 4.5 will present an overview of the studied variables, while an overview of the collected data and the data analysis methods will be given in paragraph 4.6.

### **4.2 Research design**

#### **4.2.1 Research questions**

The objective of our study is to find out what determinants are involved in patient education in community pharmacies and which interventions are needed to increase patient education activities in community pharmacies. Studies about pharmacists' patient education behavior have shown that pharmacists' beliefs about patient education and their perceptions of patients', doctors' and colleagues' norms are related with their patient education behavior, although this did not fully explain their patient education behavior (chapter 2). The theories discussed in chapter 3 about individual behavioral change state that next to one's beliefs, one's abilities also influence new behavior, while the persistence of new behavior is influenced by one's positive experiences. Next to these individual variables, organizational variables may also influence the innovation process of developing patient education in a community pharmacy and as a consequence both kinds of variables need attention when efforts are made to develop patient education in community pharmacies. Our research questions concentrate on two aspects of patient education, which concern the determinants of this behavior on the one hand and the effects of an intervention program on this behavior on the other hand.

#### **Determinants' question**

Our first research question concentrates on the determinants of technician's patient education behavior. Both technicians' variables and pharmacy variables may be involved in technicians' patient education behavior. The technicians variables which have been studied were based upon the three categories of variables which are distinguished in Green's PRECEDE/PROCEED model. They concern the so called predisposing, enabling and

reinforcing factors with respect to the behavior. With respect to the pharmacy variables we are interested in the extent to which pharmacists' views on patient education and the frequency of staff meetings in the pharmacy influence technicians' patient education behavior. Figure 4.1 presents an overview of the independent and the dependent variables, which are to be studied.

Independent (technician)		Dependent variable		Independent (pharmacy)
Predisposing factors	→	Technicians' patient education behavior	←	Pharmacists' opinions on patient education
Enabling factors	→		←	Staff meetings in pharmacy
Reinforcing factors	→		←	

Figure 4.1 Studied variables of technicians' patient education behavior

Our first research question concentrates on the relationship between both categories of independent variables and the dependent variable. To what extent is technicians' patient education behavior related with the technicians' variables and pharmacy related variables, listed below?

*Predisposing factors: technicians' motivation*

Beliefs about their responsibility to be involved in patient education  
 Beliefs about patient education outcomes on a professional level  
 Beliefs about patient education outcomes on a patient level  
 Beliefs about own (in)competence for practicing patient education '  
 Perceived observability of practicing patient education

*Enabling factors: technicians' abilities*

Perceived privacy problems for practicing patient education  
 Perceived pharmacist's instructions about patient education  
 The number of drug knowledge courses they followed after they left school  
 The number of patient education courses they followed after they left school

*Reinforcing factors: technicians' experiences*

The positive feedback received from doctors on their patient education behavior  
 The positive feedback received from the pharmacists on their patient education behavior  
 The positive feedback received from colleagues on their patient education behavior  
 The improvement of team cooperation experienced as a result of patient education activities

*Pharmacy variables*

- Pharmacist's opinions about patient education
- Frequency of staff meetings about drugs
- Frequency of staff meetings about patient education

**Effects of intervention program**

Our second research question concerns the effects of the intervention program on technicians' patient education behavior. We studied the extent to which the frequency and the quality of the verbal drug information given to pharmacy visitors has been influenced by an one-year taking intervention program.

**4.2.2 Design**

Our research questions concentrate on the **determinants** of technicians' patient education behavior and on the **effects** of an intervention program on this behavior and its determinants. The studied patient education behavior concerns the provision of verbal drug information to pharmacy visitors.

The effects of the intervention program have been studied with an experimental design, with a random allocation of community pharmacies into the experimental and the control group. The pharmacies which belong to the experimental group were subjected to a one year intervention program, the details of which will be described in paragraph 4.3. A control group of pharmacies participated in the study in order to be able to analyze whether any changes in patient education behavior may be due to the intervention program or not. Data about the dependent and independent variables were collected before and after the intervention period, with the time schedule listed in figure 4.2. To answer the question whether the intervention program has influenced technicians' patient education behavior, the pretest and posttest collected data have been analyzed on a pharmacy level.

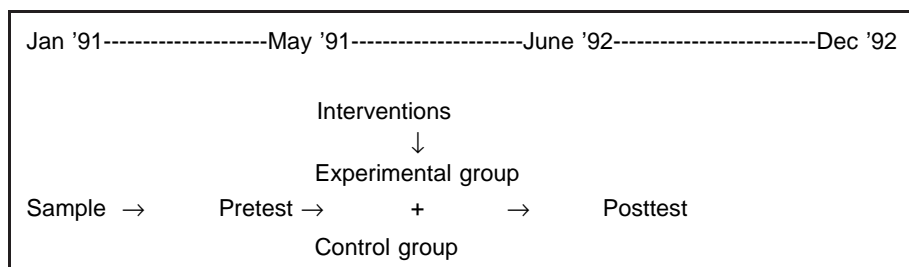


Figure 4.2 Time schedule

The determinants of patient education behavior have been studied by analyzing the observed patient education behavior such as demonstrated in audiotaped patient contacts on its relationships with the studied technicians' variables and pharmacy variables. Data about these variables were collected with a survey among the individual technicians and the pharmacists. To answer the question about the determinants of technicians' patient education behavior the posttest data of the experimental and control group were used. We preferred these posttest data (to the pretest data) as they are expected to show the largest variance of observed patient education behavior of the participating pharmacy teams.

### **4.2.3 Methodology**

In this study both quantitative and qualitative data have been used to answer its research questions. Quantitative audiotaped data were used to study the verbal drug information given to pharmacy visitors in the pharmacies involved. We have analyzed the audiotaped patient contacts with an observation protocol, presented in appendix I. The audiotaped data were used to study the effects of the intervention program on the verbally given information and to study the determinants of technicians' patient education behavior. The information about the technicians' variables, expected to be related with technicians' patient education behavior, was collected with a survey that is listed in appendix II.

Qualitative data were used to describe the innovation processes in the pharmacies and their levels of exposure to the intervention program. These data were collected by means of verbal and written communication with the participating pharmacy teams during the intervention period. The information may reveal the kinds of problems pharmacists and technicians may meet when developing patient education in their pharmacy. Qualitative data about the development of patient education may also reveal any reason for not participating in the different activities of the intervention program. As the pharmacy teams of the experimental group may differ in their level of exposure to the intervention program, any lack of progress in patient education may be due to a limited exposure to the intervention program

## **4.3 The intervention program**

### **4.3.1 Introduction**

This paragraph describes the contents of the intervention program, which was submitted to the pharmacies of the experimental group from May 1991 until June 1992. The main objective of this intervention program is to develop patient education in the community pharmacies involved. Since the intervention period is limited in time, it has to initiate a process of change in the pharmacies that is to continue afterwards. In other words, pharmacy teams have to

learn how to work on patient education in such a way that the continuous development of patient education is guaranteed. Therefore the specific objective of the intervention program is to encourage pharmacy teams, especially the pharmacists, to apply the knowledge they gain. For this reason pharmacists were stimulated to develop and supervise new patient education activities in their pharmacies during the intervention period. In this way pharmacists could have some exercise in planning and supervising the innovation process of developing new patient education activities. The contents of the intervention program was built upon pharmacists' and technicians' needs for support with respect to the activities they wish to develop in their pharmacies. The standardized part of the intervention program concerned the stagewise development of patient education in the pharmacy. The different stages of the innovation process are described in detail in section 4.3.2, while the objectives and contents of the different interventions addressed to the pharmacists and technicians involved, are described in section 4.3.3.

#### **4.3.2 A stepwise development of patient education**

As we learned from the theories about organizational change processes such as discussed in section 3.3, an innovation process consists of an initiation stage which leads up to the decision to innovate (or not to innovate) and the implementation stage, when the innovation is put into practice. Based upon these two stages we decided to work on a stagewise development of new patient education activities in community pharmacies which consist of 5 different stages. These different stages of the innovation process are: knowledge-awareness, diagnosis, decision and planning, initial implementation and sustained implementation. While passing through these 5 stages of the innovation process, the pharmacists and pharmacy technicians also pass through the different stages of the individual behavioral change process. In other words, the contents and sequence of the interventions have to be adjusted to both the stages of the innovation process within the organization and to the stages of the individual change process.

Figure 4.3 presents the different stages of the innovation process, the individual variables involved and the interventions needed to influence these variables.



Innovation stages	Individual variables	Interventions to technicians	Interventions to pharmacists
Knowledge-awareness	<b>Motivation</b> Role beliefs Beliefs about outcomes Beliefs about self-efficacy	<b>Staff meeting 1</b> Information Discussion <b>Commun.course 1</b>	<b>Meeting 1</b> Leadership style
Diagnosis			
Decision-Planning	<b>Abilities</b> Instructions new activity Drug knowledge Organizational resources Communicative skills Perceived observability Perceived privacy problems	<b>Staff meeting 2</b> Written plans Education about drugs Staff decisions <b>Commun course 2+3</b>  <b>Teamtraining</b>	<b>Meeting 2</b> Planning activity
Initial implementation	<b>Positive experiences</b> Feedback from others Other positive effects	<b>Staff meeting 3</b> Positive feedback	<b>Meeting 3</b> Implement activity
Sustained implementation			<b>Meeting 4</b> Evaluate

Figure 4.3 The development process of patient education in community pharmacies

This intervention program has been submitted to the participating pharmacy teams, who all started with the first stage of the innovation process and passed through the other stages of the program with a different time-table. With respect to the innovation, each pharmacy team made her own choice about the patient education activity which they wanted to develop and how to use the courses and instruments provided. Our supervision consisted of organizing meetings with the pharmacists, offering courses to technicians and providing the instruments to pass the different stages of the innovation process. Successively a description is given of the objectives and activities of each stage of the innovation process of developing patient education in community pharmacies.

### Stage 1. Knowledge-awareness

A first step in the development of new behavior is to create a positive orientation toward the innovation. The pharmacists and technicians involved first had to be convinced of the necessity of patient education and of the opportunities to practice patient education in their pharmacy. At this stage a staff meeting was organized in order to provide technicians with information about patients' informational needs and patients' incorrect drug use on behalf of inadequate patient education. Attention was also given to any resistance of pharmacists and

technicians to patient education, which may be based upon their fear for the new situation or for changing the old situation in the pharmacy. This attention consisted of informing technicians about the innovation process and responding to their learning needs for practicing patient education, such as their level of drug knowledge and their communicative skills. This information and support was given in order to influence and diminish any resistance toward new activities in patient education. Based upon the theories discussed in chapter 3, we expected that this first stage (the initiation stage of the innovation process) could take some time in community pharmacies, as they are organizations which are rather formalized, centralized and have a low complexity. For this reason this first stage has been passed carefully in order to achieve pharmacists' and technicians' commitment to the objectives of the intervention program.

### **Stage 2. Diagnosis**

This stage concentrated on the analysis of the actual level of patient education in the pharmacy. At this stage two questions had to be answered: what is actually being done in patient education and how is this evaluated by the members of the pharmacy team? Based upon this evaluation new activities had to be planned in stage 3. In order to collect data about the level of patient education, the pharmacy teams were provided with registration sheets and checklists to describe their activities in patient education. The objective of this stage was to evaluate the actual level of patient education in the pharmacy with the pharmacy team.

### **Stage 3. Decision and Planning process**

Based upon the diagnosis of the actual level of patient education in the pharmacy, decisions had to be made about new patient education activities. These decisions were made by the pharmacists and the technicians together, since the commitment of all staff members is needed for a successful implementation of new patient education activities. In order to be adequately prepared to pass this stage with success, a separate pharmacists' meeting about planning processes was organized. At first step the pharmacy teams had to decide about the objective of a new patient education activity in their pharmacy. Pharmacists were stimulated to consider all alternatives in patient education activities in relation with frequency of topic, required knowledge and skills, feasibility, related costs, and so on. The pharmacists had been given the advice to select a patient education activity which has a low degree of complexity on a topic common to a large number of patients and requires a limited level of drug knowledge and communicative skills of the technicians. Based upon the objective of a program, this program had to be planned including the required preparations to implement this activity in the pharmacy. Pharmacists were given the advice to apply the general principles of planning in their patient education programs (Breckon 1989):

1. Planning the target population (who has to benefit from the program?)

2. Planning the educational instruments (how should they benefit?)
3. Planning the process (the who, when and what of the program)
4. Planning for permanence (do not forget a long-range planning)
5. Planning priorities (choosing the highest needs and best opportunities)
6. Planning the evaluation (of the innovation process and outcomes)

Stage 3 was finished with a written plan about what had to be done and why, who were to be involved, when it had to be started and when the new activity was to be evaluated in a staff meeting. Technicians' agreement with this plan was emphasized, since they has to work with the plan and so their commitment is a necessary condition for a successful start of stage 4, when the plan is put into practice. Before the new activities in patient education could be implemented the required conditions on an individual and organizational level had to be created. Since these conditions are related with the new patient education program as planned at stage 3, pharmacy teams differed in this respect and worked on different kinds of preparations, like the required drug knowledge and communicative skills which have to be fulfilled before the new activity is started. In addition to these factors on an individual level, preparations were made on an organizational level such as the presence of written patient information, the creation of privacy conditions, or the setting of new priorities in the pharmacy tasks.

#### **Stage 4. Initial implementation**

After an adequate preparation, the activity was implemented in daily pharmacy practice and were followed carefully as problems may arise such as a diminishing motivation or perceived insufficient preparation, that have to be dealt with. Therefore pharmacists were given the advice to organize regular staff meetings with the objective to communicate with their technicians about their experiences with the newly started activities. In addition, the pharmacists were given the advice to give technicians positive feedback on their patient education behavior as this is known to reinforce the new practiced behavior.

#### **Stage 5. Sustained implementation**

At this stage the results of the new patient education program, and the way it has been introduced in the organization were evaluated, leading to the stage of sustained implementation. Questions which had to be answered are: was the written plan clear about all aspects, are the objectives achieved and were all staff members adequately prepared to put the new activity into practice? The participating pharmacists were provided with a checklist which may be helpful to collect information about technicians' experiences with and opinions about the new activity. Technicians' views on the innovation process is important, since their experiences influence their motivation for continuing the new started activity and also contain a lot of information about the quality of the recent planning process and preparations for the

introduced patient education program. This information was used to answer the question how the pharmacy team has passed through the innovation process, and what can be learned in this view for other activities which are to be developed. This will bring us to the last part of the evaluation stages: further changes were discussed and a new cycle started. At what stage this second cycle may start, depends on the extent to which stage 1 (knowledge-awareness) and stage 2 (diagnosis) have been passed carefully the first time. Before pharmacy teams entered this stage, a separate meeting for pharmacists was organized about evaluation principles and methods and about how to stimulate technicians o participate actively in the evaluation process.

### 4.3.3 Interventions

During the intervention period several activities were organized addressed to pharmacists and technicians separately and to both groups together. These activities may be distinguished into the team activities that were carried out in the pharmacy, the pharmacists' meetings which were organized at the university and the communication courses for both the pharmacists and the technicians, which were also organized at the university. Figure 4.4 lists these different kinds of interventions, which will be described in detail afterwards.

<p><b>Team activities</b></p> <ol style="list-style-type: none"> <li>1. Staff meeting with supervisors about patient education</li> <li>2. Diagnosis of actual level of patient education</li> <li>3. Decide about and plan new patient education activity</li> <li>4. Prepare and implement new patient education activity</li> <li>5. Evaluate innovation process and outcomes</li> </ol>	<p><b>Period</b></p> <p>spring 1991 summer 1991 autumn 1991 winter 1991/1992 spring 1992</p>
<p><b>Pharmacists' meetings</b></p> <ol style="list-style-type: none"> <li>1. Leadership and innovations</li> <li>2. Planning of patient education activity</li> <li>3. Implementation of patient education activity</li> <li>4. Evaluation of innovation process</li> </ol>	<p>autumn 1991 autumn 1991 winter 1991/1992 spring 1992</p>
<p><b>Communication courses</b></p> <ol style="list-style-type: none"> <li>1. Analysis of communication processes</li> <li>2. Communication skills training</li> <li>3. Communication with immigrants</li> <li>4. Teamtraining</li> </ol>	<p>autumn 1991 winter 1991/1992 winter 1991/1992 spring 1992</p>

Figure 4.4 Overview of Interventions

### **Team activities**

As the intervention program had to start a structural change process in the pharmacy teams involved, the pharmacy teams passed through the innovation process of developing patient education with active participation. With respect to the different stages of the innovation process pharmacy teams were provided with the necessary instruments and received support to pass through the different stages in a successful way.

The team activities were carried out in the pharmacy by the pharmacy team on their own, except the first listed activity which concerned a staff meeting about patient education which has been organized by the supervisors of the project. This first staff meeting had the objective to achieve pharmacists' and technicians' commitment to the objectives of the intervention program which implied the development of verbal drug information given to patients. For this reason information has been provided about several topics in patient education, such as patients' needs for information, patients' drug behavior and the effects of both written and verbal drug information on patients' drug knowledge and their compliance with drug instructions. All other activities of the pharmacy teams were supervised by the pharmacist himself, who was prepared to play this role by visiting the foregoing pharmacists' meeting.

### **Pharmacists' meetings**

As we wanted to achieve progress in patient education in the pharmacies involved, we decided that our main target group are the pharmacists, being the decision makers in the pharmacies. For this reason we organized separate meetings with the participating pharmacists, with the objectives to provide opportunities for sharing experiences or learning how to manage the different stages of the innovation process in the pharmacy and for receiving feedback on their supervision of the pharmacy team activities. Some of the pharmacists' meetings concentrated on pharmacists' attitudes while others focused on pharmacists' skills with respect to the management process of developing patient education. All meetings lasted 6 hours and consisted of short lectures, interactive group activities and individual exercises which were related with the different patient education programs of the pharmacies involved. At each meeting appointments were made about the team activities at which pharmacists should concentrate during the next period and about what they were expected to report about at the next pharmacists' meeting.

### **Communication courses**

The communication courses were organized several times, to enable pharmacists and technicians to attend these courses, although they were given the advise to follow the courses in the listed sequence. Most of the courses were visited by technicians and pharmacists who worked in different pharmacies, except the course listed first which was organized specifically for pharmacy technicians only.

In the course listed first, named 'Analysis of communication processes' several problems in pharmacy patient communication were demonstrated with video presentations, which are analyzed and discussed afterwards. This 4 hours course had the objective to increase technicians' knowledge about communication processes, their listening skills and their interests in patient education.

The course listed second concentrated on the communication skills which are needed for effective patient education about drugs and took one day. In this course pharmacists and technicians were involved in role plays with simulating patients, while their performance is analyzed afterwards with the help of videotaped recording. In this manner they received feedback from the supervisors as well as from colleagues about their patient education behavior. This course had the objective to increase the level of communicative skills and self-efficacy in patient education.

The course listed third concerned patient education addressed to immigrants and concentrated on the specific instruments to overcome the problems of misunderstanding for reasons of language and cultural differences. The objective of this one day course was to teach pharmacists and technicians to apply specific educational materials addressed to these patients and how to deal with interpreters, whose help may facilitate the communication process.

In the communication course that is named 'team training', a team directed approach of the communication skills training was used. The advantage of this team directed approach is that the members of a pharmacy share experiences and may work on patient education afterwards, based upon their collective learning experiences. It was possible to formulate specific learning needs on whom the course should concentrate, but subjects could also be related with the communication patterns in the pharmacy team.

Chapter 5 describes the extent to which the participating pharmacy teams were involved in the development of new patient education activities and attended the communication courses and pharmacists' meetings. Based upon pharmacists' and technicians' experiences with the intervention program a manual has been written addressed to pharmacists about how to develop patient education successful in daily community pharmacy practice.

#### **4.4 Study population**

Our study population consisted of practicing pharmacy teams. Based upon the theories discussed in chapter 3, about behavioral change and innovations in organizations, the criteria have been formulated to select those community pharmacies that were to participate in our study.

### **Selection criteria participating community pharmacies**

1. The pharmacist has to be educated with respect to the innovation
2. The pharmacist has to be willing to invest time and energy in the innovation process
3. The pharmacist has to work more than 20 hours/week in order to be able to supervise and support technicians with respect to the innovation process
4. Other pharmacists in the pharmacy, have to agree with the participation in the project.

In order to meet the first selection criterium all pharmacists who had ever attended one of our postgraduate courses concerning patient communication in the last 5 years, were mailed about our project and invited to participate in the project. Of the 140 eligible pharmacists 30 responded and met the selection criteria. Later on this number decreased to 21 eligible pharmacies for reasons like job change, lack of time or rebuilding of the pharmacy.

The pharmacists and pharmacy technicians of the remaining 21 pharmacies were visited to inform them about the project and to make agreements with the participating pharmacists about the objective of the intervention program to increase and improve the verbal information about drugs in their pharmacies. At the same time all pharmacists and technicians involved filled in a survey, in order to collect information about the different variables which were expected to be related with patient education in community pharmacies.

Subsequently the participating pharmacies were subdivided equally into the experimental (10 pharmacies) and the control group (11 pharmacies), based upon those technicians' variables expected to influence their patient education behavior or the innovative capacity of a pharmacy. These technicians' variables concerned their opinions about the outcomes of patient education, their abilities to practice patient education (including their educational level), and their experiences with patient education.

Although organizational variables may also influence the innovation process of introducing new patient education activities, these variables were not used as our small sample size allowed a limited number of variables to be used in the matching procedure and in this respect we preferred the technicians' variables to the organizational variables in the matching procedure.

### **Experimental group**

Originally the experimental group to which the intervention program was applied consisted of 10 community pharmacies. This number decreased to 9 pharmacies when the audiotapes of patient contacts were to be made, as in one pharmacy the technicians did not agree to participate in the audiotaped patient contacts and preferred to develop their drug knowledge before they started to work on patient education. For this reason this pharmacy was excluded from the project and we continued our activities with the 9 remaining pharmacies. In one of these pharmacies two pharmacists were working, while the others were supervised by only

one pharmacist. The number of pharmacy technicians ranged from 4 to 6. Four pharmacies participated in a health care center, which owned the pharmacy. The other 5 pharmacies were privately owned by the pharmacist or together with another pharmacist who worked in the pharmacy.

Staff meetings were organized with different frequencies, varying from fewer than 2 to more than 8 meetings in a year. These meetings of pharmacists and technicians concentrated on the organizational aspects in the pharmacy and on technicians' drug knowledge. The majority of the technicians (78%) were taught about drug information at school, but only 27% received lessons about patient education at school.

### **Control group**

The control group consisted of 11 community pharmacies. Their number of pharmacy technicians ranged from 4-13 persons, with two pharmacists working in 6 of these pharmacies and one pharmacist in the remaining pharmacies. Most pharmacies were private properties of the pharmacists, 3 pharmacies participated in a health care center which at the same time owned the pharmacy.

Staff meetings were organized in different frequencies, varying from fewer than 2 meetings a year to more than 8 meetings in a year. The subjects, discussed in these staff meetings concerned the organizational aspects in the pharmacy and technicians' drug knowledge. Most technicians (71%) were taught about drug information at school, while 38% reported to have received lessons about patient education at school.

### **Representativity**

As we wanted to focus on the process of developing patient education in a daily community pharmacy practice, a selective sample of community pharmacies participated in our study. These pharmacies may be viewed as having good opportunities to develop their patient education activities, since their selection was based upon pharmacist's education, motivation and abilities to work on patient education. As a consequence our collected data about the observed patient education behavior do not represent the average Dutch community pharmacy. One may expect higher levels of patient education in these pharmacies compared to the average situation in Dutch community pharmacies.



## 4.5 Variables

### 4.5.1 Dependent variables

Patient education has been operationalized as the verbal drug information given to pharmacy visitors. Data about the provided verbal drug information have been collected with audiotaped recording patient contacts in the pharmacies involved. These data have been used to study the frequency, contents and quality of the information provided to patients. Figure 4.5 lists the studied dependent variables that have been analyzed in the collected audiotaped patient contacts.

In interpreting the results about patient contacts in the pharmacies one should take into account that audiotaped data are limited to the verbal part of the communication processes between people and do not include their nonverbal communication. One should also notice that we concentrate on the provided verbal information, while patients may also receive written drug information by means of drug labels or patient package inserts.

Variables	Description
Frequency	Verbal drug information given to pharmacy visitors
Quality	Q1 Verbal encouragement of patients' drug questions Q2 Patients' questions about drugs Q3 Providing motivating information Q4 Providing information about drug characteristics Q5 Feedback control questions about provided information

Figure 4.5 Observed patient education behavior

Successively a description is given of how we studied the frequency, contents and quality of the provided verbal drug information such as observed in the audiotaped patient contacts.

#### Frequency and contents of verbal drug information

The unit of observation to study the provided drug information concerns a pharmacy patient contact, such as registered in the audiotaped data. We studied the extent to which these contacts included the provision of verbal drug information to patients, thereby excluding information about drug costs, the name of the drug and information about the supplied number of drug units (tablets, capsules). When patients offered prescriptions and they received the prescribed drugs afterwards, this was classified as different patient contacts. When a patient contact concerned more than one drug (which sometimes was revealed by the audiotapes),

this was classified as different contacts in order to adjust the data about the frequencies of providing verbal drug information for the number of drugs involved. So the results about the provided drug information and the patients involved, include cases of one and the same patient. We preferred to classify the cases with more than one drug as different patient contacts, as one may expect an influence of the number of drugs on the frequency of providing verbal drug information to patients. When we do not account for the number of drugs involved, the results should be more confounded by differences between the patient populations of the participating pharmacies, as it is known that the elderly have higher drug consumption rates than the younger patients.

The provided verbal drug information has been classified according to the described information categories of the observation checklist, which are listed in figure 4.6.

Information category	Included information aspects
1 dosage	how frequently/how much to use
2 time	at what hour/part of the day/how long to use
3 application	where/how to apply
4 activity	indication/how it works/how soon to expect effects
5 product advice	advise what product should be used
6 meals	how to deal with meals (take drugs before/after meal)
7 storage	where/how/for how long to store
8 adverse effect	side effect/tolerance/dependency
9 drug combination	information/instruction about a drug combination
10 contra indication	patient condition that does not allow drug use
11 other information	e.g. remarks about drug label, ppi, dosage change

Figure 4.6 Description of information categories

### Quality of verbal drug information

In interpreting the quality of the verbal drug information, such as presented in audiotaped data, criteria are needed that are objective and are to be analyzed with only the verbal information of the communication process. Based upon these restrictions five criteria have been used to study the quality of the verbal drug information, by analyzing the extent to which the provided information met these criteria. We will briefly describe these quality criteria.

*Verbal encouragement of patients' questions*

This quality aspect has been included based upon the knowledge that patients ask few questions and feel reluctant to ask questions in the pharmacy, as has been reported by the studies reviewed in chapter 2. For this reason we studied the frequencies of the verbal invitations addressed to patients to ask their drug questions in the pharmacy. This may happen when technicians or pharmacists say "do you have any questions?" or "do you want to know more about this drug?". In interpreting the results one should notice that patients may also be invited to ask questions by nonverbal communication such as nodding, which could not be registered with audiotaped data.

*Patients' questions about drugs*

The effects of patient education are influenced by the extent to which the provided information is answering patients' needs for drug information, as was shown in chapter 2. In order to meet patients' informational needs, patients' questions are a necessary first condition. As it is known that patients feel reluctant to ask questions in the pharmacy, pharmacists and technicians may facilitate patients to ask their drug questions. For this reason the frequency of patients' drug questions may be viewed as an indication for the quality of the verbal drug information.

*Provision of motivating information*

The effects of drug information may increase when instructions addressed to patients' behavior also include information about the importance of the instruction. For example the advice to swallow tetracycline capsules with a glass of water may have better compliance rates if patients are told that this may prevent stomach irritation. For this reason we studied the extent to which the provided information about drug instructions included background information that may be viewed as motivating patient to follow the instructions given to them.

*Provision of drug characteristics' information*

Empirical studies, especially about consumers' use of drug information centers, evidently have shown patients' interests in information about what they may expect from drug therapy, such as based upon the effects and adverse effects of drugs. In addition to the information about how to use a drug, patients also want to be informed about the characteristics of a drug. The verbal drug information that patients receive in community pharmacies however concentrates on drug instructions, while information about the effects and adverse effects seems to be less common. For these reasons we were interested in the provision of information about the characteristics of a drug, which concerns the effects, activities, indications, drug interactions, contra-indications or side-effects of drugs. This quality aspect has been studied by analyzing the provided information to find the extent to which it included one of these different drug character aspects.

*Feedback control questions about provided information*

Since it is known that patients may have problems in understanding the information given to them, or in applying the information adequately, the quality of the communication process may be improved by asking patients' reactions about the provided information. For example after providing information about a drug side effect, one may ask patients whether this information answers their drug question or whether the information is explained in an understandable way. Based upon patients' answers one may supply additional information in order to increase the effectiveness of the information given to patients.

The data about the quality of the provided information such as demonstrated in the audiotaped patient contacts have been collected with the observation checklist that has been used to study the frequency and contents of the verbal drug information.

**4.5.2 Independent variables**

The independent variables that are expected to influence the verbal drug information in the pharmacy may be distinguished in two categories technicians' variables and pharmacy variables on the one hand and patient variables on the other hand. Figure 4.7 presents these categories of independent variables which have been studied in relation with the dependent variables.

<b>Independent variables</b>	<b>Dependent variables</b>	<b>Independent variables</b>
<b>Technicians/pharmacy related</b>	<b>Patient education behavior</b>	<b>Patients' related</b>
Technicians' motivation	Frequency and quality of verbal drug information	Encounter reason
Technicians' abilities (incl. education)		Gender
Technicians' experiences		Identity
Pharmacists' opinions on patient education		Language
Frequency and contents staff meetings		

Figure 4.7 Independent and dependent variables

*Technicians' and pharmacy variables*

The determinants of patient education behavior have been studied by concentrating on pharmacy technicians. Pharmacists are involved in a minority of the patient contacts, which concerns a specific sample of patient contacts and therefore the analysis of the determinants of patient education behavior is based upon technicians' behavior at the counter. The

variables which have been studied concern technicians' motivation to practice patient education, their abilities to practice (including their educational level) and their experiences with patient education. They were asked to rank their level of agreement with different statements about patient education, which referred to their motivation, abilities and experiences. These data have been collected with a survey among all pharmacy technicians of both the experimental and control group of pharmacies before and after the intervention program. In addition, pharmacists were asked about their views on patient education, by presenting them the same questions which were included in the survey addressed to the technicians. At the same time, pharmacists were asked about the frequency and contents of staff meetings in their pharmacy. Figure 4.8 presents an overview of these categories of independent variables, such as expressed in separate questions of the survey.

<b>Variables categories</b>	<b>Operationalization</b>
<p><b>Motivation for patient education</b></p> <p>Role beliefs</p> <p>Beliefs about pharmacy outcomes</p> <p>Beliefs about patient outcomes</p>	<p><b>Patient education.....</b></p> <p>belongs to my professional responsibility is as important as other pharmacy tasks</p> <p>contributes to improved patient contacts expands my professional activities</p> <p>benefits proper drug use benefits patient's autonomy</p>
<p><b>Abilities for patient education</b></p> <p>Perceived privacy problems</p> <p>Perceived own incompetence</p> <p>Perceived observability problems</p> <p>Perceived lack of instructions</p>	<p><b>Patient education.....</b></p> <p>requires more privacy conditions in our pharmacy</p> <p>requires more drug knowledge than I have requires more communicative skills than I have</p> <p>is more difficult to me when my pharmacist listens is more difficult to me when my colleagues listen</p> <p>requires more detailed instructions from the pharmacist</p>
<p><b>Experiences with patient education</b></p> <p>Positive experience</p>	<p><b>Patient education.....</b></p> <p>has given me positive reactions from doctors has given me positive reactions from my colleagues has given me positive feedback from the pharmacist has improved the cooperation in the pharmacy</p>
<p><b>Educational level</b></p>	<p>School education about drug information School education about patient education Attended drug knowledge courses after school Attended patient education courses after school</p>
<p><b>Staff meetings in the pharmacy</b></p> <p><b>Pharmacists' views on patient education</b></p>	<p>Frequency staff meetings/last year Frequency staff meetings about communication/last year Frequency staff meetings about drugs/last year</p> <p>Items of the technicians' survey were presented</p>

Figure 4.8 Technician's personal and pharmacy variables

*Patients' variables*

As the frequency and quality of provided verbal drug information may be influenced by the patient involved, the observers also registered information about patient's gender, identity, language and reason for visiting the pharmacy. Figure 4.9 presents the patients' variables that have been studied.

Variables	Coding categories
gender	man woman child
language	Dutch native speaker not Dutch native speaker
identity	the drug user not the drug user
encounter reason	prescription offering prescription drug supply OTC supply not drug related

Figure 4.9 Patients' variables

Patient's gender has been included, as studies about doctor patient communication have shown that female patients receive more information and ask more questions than male patients. Patient's language has been included, as differences in languages may prohibit the provision of drug information. Patient's identity has been registered, as the provided verbal information may be different in the case of communicating with the drug user himself or with one of his relatives. Finally, patient's encounter reason has been included as this is known to be related with the provided drug information, as has been described in the review given in chapter 2.

Unfortunately audiotaped data do not include information about patient's age and whether a patient receives a drug for the first time or as a refill. These patients' characteristics are also known to be related with the provision of verbal drug information, as was found in the studies reviewed in chapter 2.

## 4.6 Data collection

### 4.6.1 Audiotapes

Data about the provided verbal information to patients have been collected with audiotapes. The collected data totalled 2 x 10 hours of audiotaped patient contacts in all the pharmacies of the experimental and the control group, which were collected before (10 hours) and after (10 hours) the intervention period. All pharmacies received an audiotape recorder and tapes

and a written instruction about the different times and days on which the data had to be collected in order to achieve a representative sample of their general daily patient contacts. The participating pharmacists were given the advice to inform their customers and technicians about the audiotaped recording and to ask their consent in this respect. For this reason the pharmacists received a written text about the objective and procedure of the data collection, to inform their customers and ask their consent with the audiotape recording. Similarly, the pharmacists were sent information that could be helpful to achieve technicians' commitment to the data collection method in the pharmacy.

The audiotapes were collected for a period of 1-3 months before and after the intervention period, and ought to be a representative sample of the actual situation in the pharmacies involved. Nevertheless, one should notice that the audiotaped recording may have influenced the communication process with patients. One may expect a lower level of patients' and technicians' communications about drugs, as both populations may feel reluctant to be observed. This has been confirmed by one third of the observed pharmacy technicians who reported about their experiences with the audiotaped recording in the surveys afterwards. At the same time pharmacists may have increased their activities in patient education from the moment that audiotapes were made, as they intended to increase and improve patient education in their pharmacies and for this reason participated in the project.

A checklist was developed to score the frequency, contents and quality of the verbal drug information given to pharmacy visitors and the information about the patients involved. The observation protocol is presented in appendix I. The reliability of the protocol has been tested by using a subsample of the audiotapes, which have been twice analyzed by all observers. Scores for interrater and intrarater reliability have been determined with Cohen's kappa.

The observers have used the protocol by noting each item as being present or not, in each patient contact that has been registered. One patient may have been registered more than once, as the moments of prescription offering and prescription delivery have been noted as two separate patient contacts. When a patient contact concerns two (or more) drugs this has been registered as separate patient contacts, in order to control the number of drugs involved. In interpreting the results one should notice that audiotaped data do not always include information about the delivered number of drugs. Especially when no information is given at all to the patient, the audiotaped data may not reveal how many drugs are involved. As a consequence the results about the provided verbal drug information may show higher frequencies than the actual situation in the pharmacies involved.

As these analyses of the audiotapes revealed large differences among technicians of one and the same pharmacy, we decided to re-analyze the posttest collected audiotapes on an individual technician level. This analysis has been carried out with support from the pharmacy teams, as they were able to recognize the voices of each individual technician. These



collected data about patient education behavior of each individual pharmacy technicians were used to study the determinants of technicians' patient education behavior.

#### **4.6.2 Survey**

A survey was used to collect information about the technicians' variables that may influence the level of patient education in the pharmacies. Appendix II presents the survey addressed to technicians. The survey data were collected within one month after the audiotaped data, in order to limit its influence on technicians' behavior during the audiotaped recording.

In interpreting the results about technicians' variables one has to realize the limitations of survey collected information, such as respondents' tendency to give socially desirable answers. The technicians filled in the survey anonymously and were advised to return their surveys separately, but most of them collected the surveys in their pharmacy and returned them together. The survey questions concerning the abilities to practice patient education, tend to show technicians' perceived abilities to practice patient education. Similarly the collected data about technicians' knowledge and skills concern the frequency of attended courses and do not include information about respondents' actual knowledge and skills or about the quality of the attended courses.

Pharmacists' views on patient education have been studied by presenting them a survey that included the listed patient education items of the technicians' survey, while additional attention was given to the communication patterns in the pharmacy by asking them about the frequencies and contents of the staff meetings and individual discussions with technicians.

#### **4.6.3 Data analysis**

The collected audiotaped data and survey data were entered in separate databases (Dbase III+). After correcting for data entry mistakes, these data about the audiotapes and the technicians' surveys were linked and studied on their relationships with the help of SAS (statistical application social sciences). Two databases have been used to answer our research questions. One database contained information on an individual technician, which referred to those technicians who agreed to participate in the determinants study. This database included information about their patient education behavior, their patient samples, the surveys and the pharmacy related variables (pharmacists' views on patient education and staff meetings). Another database included information on a pharmacy level and has been used to answer the question about the effects of the intervention program.

The determinants of patient education behavior have been studied by a multiple regression analysis of each distinguished outcome variable. The independent variables of interest which were studied may be distinguished into the organizational variables of the pharmacies on the one hand and on the technicians' variables that express the motivation, abilities, experiences and background variables on the other. Factor analysis has been used to reduce the collected survey data about technicians' variables to the basic ones. In addition, the patients' variables have been included in these analyses as these variables may influence the provision of verbal drug information in community pharmacies.

The effects of the intervention program have been studied by comparing the posttest observed results about the provided verbal drug information in the pharmacies that belong to the experimental and the control group. As the pharmacies of the experimental group differed in the extent to which they were exposed to the different intervention activities, we have studied the effects of the intervention program by analyzing the scores of all experimental pharmacies while separate analyses have been carried out with the results of those pharmacies that participated most frequently in the activities of the intervention program. We have analyzed the variance of observed patient education behavior after the intervention period in the experimental and control group, with correction for their pretest scores and patients' variables. The results of these analyses of variances reveal whether the intervention program influenced the frequency and quality of the verbal drug information given to patients in the pharmacies that were exposed to the intervention program.

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## 5 RESULTS

In this chapter the results are described of the different parts of our study. Paragraph 5.1 starts with a description of the extent to which the pharmacies of the experimental group were exposed to the intervention program.

Paragraph 5.2 presents information about the collected data. Successively, information is given about the response rates and the reliability of the measurement instruments, while this paragraph also presents the results of the observed patient education behavior and patients' variables, such as found before we started the interventions with the pharmacies of the experimental group.

Paragraph 5.3 concentrates on technicians' patient education behavior and presents the results of the analysis of the determinants of this behavior. This analysis has been carried out with the data of the posttest collected audiotapes, which have been analyzed on technicians' individual behavior. This paragraph also presents the results of the technicians' surveys, while a description is given of the organizational pharmacy related variables which were studied with the help of a survey among the pharmacists. These data have been used to study the determinants of technicians' patient education behavior.

Paragraph 5.4 deals with the effects of the intervention program on the frequency and quality of the observed patient education behavior. Our unit of analysis is the patient education behavior, such as observed on a pharmacy level. The effects of the intervention program have been studied by using the posttest scores about patient education in the participating pharmacies and including their pretest scores as covariates. This analysis of posttest scores reveals whether the variance of the observed frequency and quality of patient education in these pharmacies is explained by the extent to which the pharmacies were exposed to the intervention program.

### 5.1 Exposure to the intervention program

A description is given of the extent to which the pharmacy teams of the experimental group were exposed to the different interventions, what kind of patient education activities they developed and the problems they met, while working on these activities.

#### **Exposure level**

The community pharmacies of the experimental group participated in the intervention program that started in May 1991 and lasted until June 1992. The intervention program consisted of

two parts: the patient education activities which were developed in the community pharmacies and the communication courses and pharmacists' meetings, which were organized at the university. During the intervention period, the pharmacists and technicians worked at new patient education activities in their pharmacies and at the same time they attended the organized meetings and communication courses. Originally the experimental group consisted of 10 community pharmacies, while the control group concerned 11 community pharmacies (totalling 21 community pharmacies). At the moment of collecting the pretest audiotapes in these pharmacies, one pharmacy team decided however to withdraw their participation in the intervention program as the technicians preferred to increase their drug knowledge before being involved in new patient education activities. Table 5.1 presents an overview of the extent to which the pharmacists and technicians of the 9 remaining pharmacies participated in the different activities of the intervention program (the average frequencies of attended communication courses are listed and therefore include decimals behind the point).

Table 5.1 Exposure of pharmacies to the intervention program (n=9)

Interventions	Interventions/pharmacy (nrs I-IX)								
	I	II	III	IV	V	VI	VII	VIII	IX
Staff meeting pharmacy	1	1	1	1	1	1	1	1	1
Pharmacists' meetings	4	4	4	4	4	3	2	3	2
Comm.course/technician	2.5	2.3	1.3	1.8	1.5	1.0	0.8	1.0	0
Comm.course/pharmacist	2.0	2.0	1.0	0	0.5	0	1.0	0	0
Teamtraining	1	1	1	0	0	0	0	0	0
New patient education activity	1	1	1	1	1	1	1	0	1

The intervention program started with a staff meeting in the pharmacy about patient education, which was chaired by the supervisors of the project. After this first staff meeting, pharmacists' meetings and communication courses were organized, while at the same time the development of a new patient education activity was started. In total we have organized 4 pharmacists' meetings, 3 different kinds of communication courses and a team addressed training. Although the communication courses were organized for both technicians and pharmacists, these courses were attended more frequently by the technicians than by the pharmacists. Only 4 pharmacists followed one or more of the communication courses which were organized during the intervention period.

The results listed in table 5.1 demonstrate that the pharmacies differed considerably in their level of exposure to the intervention program. The observed difference in participating in the

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intervention program, will be taken into account in paragraph 5.4, which presents the results about the effects of the intervention program.

### **Reasons for non-exposure**

For several reasons the pharmacists and the technicians were found not to participate in all of the organized activities of the intervention program. In one pharmacy shortness of staff in combination with the introduction of a new computerized medication control system, limited the time available for being involved in the different activities of the intervention program. In another pharmacy the technicians reported no needs for improving their patient education activities or visiting the communication courses. In one pharmacy the pharmacist preferred to concentrate on other pharmacy activities before starting new initiatives in patient education and therefore this pharmacist and the technicians participated in only some of the organized meetings and courses. The other pharmacy teams showed higher levels of exposure, although most of them did not attend all organized communication courses and pharmacists' meetings, for reasons of time pressure.

### **Patient education activities and experienced problems**

Pharmacists were stimulated to discuss with their technicians what kind of patient education activity to develop in their pharmacy. This was found to result in patient education activities that concentrated on asthmatic drugs, cardiovascular drugs, drug interactions, drug contra indications, OTCs, patient compliance and patients' questioning. While developing these activities the technicians and pharmacists met several problems, on which we concentrated in the pharmacists' meetings or the communication courses which were organized. Pharmacists' and technicians' experiences with the development of a new patient education activity in their pharmacies were collected during the organized meetings and courses, while we also evaluated the intervention program at the last meeting with pharmacists. Technicians' reported problems with patient education concerned their perceived lack of drug knowledge and communicative skills, a lack of pharmacist's feedback on their patient education behavior and organizational problems. Pharmacists' reported problems with the development of patient education were found to concentrate on how to teach technicians about drug information, how to plan new activities, how to manage time problems and how to motivate the technicians to be involved in patient education continuously.

## **5.2 Description of collected data**

### **5.2.1 Response and instruments**

#### **Data collection**

Our collected data consisted of audiotaped patient contacts and surveys among the technicians and pharmacists of the 20 community pharmacies which participated in our study. The audiotapes have been collected during a period of 1-3 months before and after the intervention period. The patients were informed about the privacy aspects of the data collection by means of written information, placed on the pharmacy counter or entrance. Due to the study design, the technicians and pharmacists were informed about the objectives of our study and they also knew whether they participated in the control group or the experimental group. The pharmacy teams were informed about the objectives and procedures of the study extensively, in order to stimulate technicians' agreement with the data collection by means of audiotapes.

The audiotaped patient contacts ought to be a representative sample of the actual situation in the pharmacies involved. One may expect however a lower level of technicians' and patients' communication about drugs, as both populations may feel uncomfortable while being observed. The survey data concerning technicians' variables have been collected within a period of one month after the audiotaped data, in order to exclude an influence of the survey questions on technicians' behavior during the audiotaped recording.



## Response

Not all of the technicians participated in the audiotaped patient contacts, because of their absence in the pharmacy or technicians' refusal to be audiotaped. Information about this no response group is described in paragraph 7.4 which presents a comparison of the participating and non participating technicians in the audiotaped patient contacts.

With respect to the collected survey data response rates of 83% and 100% were achieved among the technicians (pretest and posttest), while 100% response has been achieved among the pharmacists (pretest and posttest). The different numbers of technicians may be due to changes within the pharmacy teams during the intervention period. An overview of the response rates in the participating pharmacy teams, is listed in table 5.2.

Table 5.2 Response rates of collected data

	Pretest			Posttest		
	sample	response		sample	response	
	n	n	%	n	n	%
Audiotaped technicians	121	90	74	125	95	76
Survey technicians	121	100	83	125	125	100
Survey pharmacists	27	27	100	27	27	100

The determinants of technicians' patient education behavior have been studied by analyzing the audiotapes on the contributions of each technician individually. This analysis has been carried out with the support from the pharmacists and technicians involved, as they were able to recognize the voices of the technicians in their pharmacy. Of all pharmacy teams, 7 refused to participate in this part of the study because of a lack of interest or privacy problems, expressed by the technicians. So the audiotapes of these pharmacies have been not been used in the analysis of the determinants of technicians' patient education behavior.

Patients were informed and asked about their agreement with being audiotaped by written letters at the counter and the entrance of the pharmacy. They seldom refused to participate in the audiotapes, as was reported by pharmacists. Exact figures about the number of patients who refused to participate are not known, as the technicians were not asked to register the non responding patients. This procedure has been chosen for reasons of limiting the influence of the research project on technicians' behavior at the counter.

### Observation protocol

The audiotaped patient contacts were analyzed on the provision of verbal drug information and on the patient variables, with a standardized observation protocol (Appendix I). The audiotaped data included information about patient's encounter reason, patient's identity with respect to the drug involved, patient's language (native speaker or not) and patient's gender. In interpreting these results one should notice the limitations of audiotaped data, which consist of verbal information only. In other words patient's encounter reason and patient's identity have been interpreted based upon the observed words, sentences and language. Patient's gender has been identified by patient's voice. The data distribution of these patients' variables among the pretest and posttest collected audiotapes are described in appendix III.

The collected audiotapes were analyzed by pharmacy students, who received a short training to define the meaning of each item precisely. The observers were not informed about the origin of the audiotapes, as this might have influenced their observations. To test the interrater and intrarater reliability, all observers twice rated a sample of 50 audiotaped patient contacts and the observer scores were compared. As one observer demonstrated a low interrater reliability score, these observations were not included and another observer re-analyzed these audiotapes which resulted in improved reliability scores. The interrater and intrarater reliability results have been calculated with Cohen's kappa and are presented in table 5.3.

Table 5.3 Interrater and intrarater reliability (Cohen's Kappa)

	<b>Obs</b>	<b>Interrater</b>	<b>Intrarater</b>
<b>Observation</b>	<b>n</b>	<b>Average</b>	<b>Average</b>
Pretest	4	.87	.75
Posttest	4	.90	.94
Average	4	.88	.84

These results show acceptable levels of reliability scores on both the pretest and the posttest scores of the observers.

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## 5.2.2 Patient education behavior

We have defined patient education as all the communicative activities which are directed to realizing patients' proper drug use. To analyze technicians' behavior, we have operationalized this definition of patient education as the verbal drug information given to pharmacy visitors. More detailed information about the kind of verbal drug information which is included into the definition of verbal drug information, has been given in chapter 4.

This paragraph presents the results about the frequency, contents and the quality of the observed verbal drug information, such as demonstrated in the pretest collected audiotapes. The collected data present an overview of the extent to which pharmacy visitors are given verbal drug information when visiting these pharmacies, before the intervention period started. In interpreting these results one should realize these pharmacies concern a specific group, as the pharmacists all had attended patient education courses and they were selected to participate in the project based upon their interests to develop patient education in their pharmacies. The complete results about the patient samples and observed patient education behavior of both the pretest and the posttest collected audiotapes are shown in appendix III.

### Frequency of verbal drug information

The provision of verbal drug information has been studied by analyzing the collected audiotapes of patient contacts in the community pharmacies. Each contact has been analyzed with respect to the provided verbal drug information. When more than one drug was involved, this has been analyzed as different patient contacts, thereby controlling for the number of drugs involved. Our definition of drug information did not include information about the number of tablets dispensed, the drug costs, the drug name and whether the drug is delivered from stock or not. The frequencies of verbal drug information given to patients in these 20 community pharmacies, such as observed in total in 200 hours, are shown in table 5.4.

Table 5.4 Frequency of verbal drug information in different encounters

Encounter category	(n*)	% verbal information		
		yes	no	missing
Prescription drug delivery	(3674)	36.0	62.2	1.8
Prescription offering	(2055)	1.6	96.3	2.2
OTC delivery	(772)	29.6	68.8	1.7
Encounter reason unknown	(283)	9.9	73.6	18.7
All drug contacts	(6784)	23.8	73.6	2.6

\* audiotaped patient contacts (pretest)

Table 5.4 demonstrates that in almost one quarter of all observed patient contacts about drugs, patients were given verbal drug information. Large differences were found in the frequencies of provided verbal drug information in the distinguished encounter categories. These differences in frequencies of verbal drug information given to patients are discussed in detail in paragraph 5.2.3 In interpreting these results one should remind that aside from the verbal drug information, patients may also receive the standardized written drug information like patient package inserts and drug labels.

### Kinds of verbal drug information

The verbal drug information has been classified into 11 described information categories, which are listed in table 5.5, which also presents the results about the contents of the provided verbal drug information, such as found in the observed patient contacts.

The results present an overview of the frequency of the verbal information given in drug contacts about the different information aspects and how frequently this information is given responding to patients' drug questions (between brackets).

Table 5.5 Frequency of verbal information about different drug aspects (n=6784)

Drug aspect	Description	% contacts including	
		verbal information*	questions
dosage	how frequently/how much to use	15.7	6.8
time	at what hour/part of the day/how long	5.2	0.4
application	where/how to apply	4.3	0.5
activity	indication/how the drug works	3.9	1.0
product advise	what product should be used	2.9	1.7
meals	how to deal with meals (before/after)	1.8	0.3
storage	where/how/for how long to store	0.9	0.3
adverse effects	side effects/tolerance/dependency	0.6	0.3
drug combination	information/instruction about combination	0.5	0.2
contra indication	condition that does not allow drug use	0.2	0.1
other aspects	remarks about drug label/ppi/changes	3.3	0.8

\* including information which is given responding patients' questions

The results listed in table 5.5 concern all analyzed drug contacts of the audiotapes, which were collected before the intervention period. These results demonstrate that the verbal drug information given most frequently are drug dosage instructions, which concern instructions about how much to take of a drug each application or each day. The second most frequently given information aspect concern instructions about at what time to take a drug (hour, part of the day, for how long). This category also included instructions about the prescribed number of days for using antibiotics. The third category of information which is given most frequently concerned information about where and how to apply a drug, like "swallow the capsules", "shake your inhaler" and "these are eyedrops". The provided information is mostly given without patients' questioning, except for the provided information about product advises, which is found to be given as a response on patients' questions in the majority of these cases. Information about drug side effects and the contra indication is given only seldom and in half of them were given as a response on patients' questions.

### Quality of verbal drug information

In interpreting the quality of the verbal drug information given to patients, we were limited to the verbal part of the communication process. As most of the time the audiotaped data did not reveal information about the drug names, we could not analyze the correctness of the provided verbal drug information about the drug concerned.

The audiotaped data however provided good opportunities to study other quality aspects of technicians' patient education behavior. The observed quality aspects refer to the communication process on the one hand and to the kinds of verbal drug information on the other. These observed quality aspects are described shortly by now, while a more detailed description has been given in chapter 4.

With respect to the communication process, we have analyzed to what extent patients were encouraged verbally to ask questions and to give feedback on the information given to them. Both kinds of remarks may be viewed as instruments to stimulate a two sided communication process with patients. Another aspect studied is the frequency of patients' questions, which is evaluated as an indicator of the quality of technicians' communicative behavior. One should take into account the underlying relationship with technicians' verbal encouragement to ask questions. Patients who are verbally invited to ask questions are expected to ask questions more frequently, but this may also be affected by technicians' nonverbal behavior which can not be analyzed with audiotaped data. For this reason we have studied the frequency of patients' questions as an indicator of the quality of technicians' communicative behavior

Another quality aspect concerns the kind of information given to patients. We have studied to what extent the provided information concerns motivating information and includes drug character information. Motivating information has been defined as the background information given with drug instructions, which motivates patients to follow the instructions given to them. Drug character information has been defined as the information about the drug characteristics, such as information about the drug activity, the drug adverse effects, the combination with other drugs or information about contra indications for drugs. This so called drug character information has been chosen as a quality aspect of verbal drug information, as patients want to be informed about these drug aspects but seldom receive this information from doctors or in the pharmacy.

Table 5.6 presents the frequencies of the studied quality aspects, such as demonstrated in the pretest collected audiotapes of pharmacy-patients contacts.

Table 5.6 Quality of verbal drug information (n=6784\*)

Quality aspect	% contacts including	
	yes	no
1 Verbal encouragement patients' questions	0.4	99.6
2 Patients' questions	5.2	94.6
3 Drug character information	4.9	95.2
4 Motivating information	1.9	98.1
5 Verbal encouragement patients' feedback	0.8	99.2

\* patient contacts about drugs

The studied quality aspects of verbal drug information were observed not frequently in the audiotaped patient contacts about drugs. Quality aspects number 1 and 5 were seldom registered in the audiotaped patient contacts and for this reason these aspects will not be used in further analysis. The remaining criteria that were used to analyze the quality of the provided drug information are patients' drug questions, the verbal information about drug characteristics and the motivating drug information that is given verbally. With respect to the relationship between patients' drug questions and the extent to which they were encouraged verbally, it was found that 47% of the verbally encouraged patients asked questions, which may be viewed as considerable different from the observed level of 5.2% of all drug contacts which included patients' questions. Apparently technicians' invitations to ask questions, stimulate patients to show their informational needs by asking drug questions. Although these results are based upon a small number of observations, they indicate the effectiveness of technicians' initiatives to stimulate patients to ask their drug questions in the pharmacy.

In addition to the verbal encouragement of patients' drug questions, technicians' nonverbal behavior may influence patients' behavior in a positive or a negative way. For this reason we were also interested in patients' drug questions, which may be viewed as an indicator of the quality of technicians' communicative behavior.

### 5.2.3 Patient characteristics and patient education

In this paragraph an overview is given of the patient variables and their relation with the frequency and quality of the provided verbal drug information, such as found in the collected data. As the results about the observed patient education behavior will be used in further analysis, we were interested into the question to what extent the provision of verbal drug information is related with the characteristics of the patient involved. These patient variables concern patients' encounter reason (hand over a prescription, receive prescription drug or

purchase OTCs), patient's identity with respect to the drug involved (the user or not), patient's language (Dutch native speaker or not) and patient's gender (female or male, excluding contacts with children).

Successively the results are presented about the provided verbal drug information in relation with patient's encounter reason, identity, language and gender, such as observed in the audiotaped patient contacts. To test the significance of the observed differences between the distinguished categories of patients, we have used Pearson Chi-square test. We will report the Chi-square test results, including the degrees of freedom and apply a 0.05 level of significance.

### Patient's encounter reason

With respect to patients' encounter reason, the majority of the observed patient contacts about drugs concerned prescription drug deliveries (54.2%). Prescription offerings counted for 30.5% of the observed patient contacts, while OTCs were involved in 11.4% of all drug contacts (in 4.2% of the drug contacts, the encounter reason could not be identified). In interpreting these results one has to remind that when the audiotapes revealed that two drugs were delivered to one patient, this was classified as two drug contacts. This procedure has increased the observed numbers of prescription drug delivery contacts and OTC contacts, while in the case of prescription offerings we could not correct for the number of drugs involved, as this was not mentioned in the observed patient contacts.

Patients' reasons for visiting the pharmacy have been studied in relation with the frequency and the quality of the verbal drug information given to patients. The studied quality aspects are the frequency of patients' questions, the provision of drug character information and the provision of motivating drug information. The results about the studied frequency and quality of the verbal drug information, such as observed in the distinguished encounters are presented in table 5.7.

Table 5.7 Encounter categories & provided verbal drug information

Encounter category	(n)	% verbal information	% patient questions	% motivating information	% character information
Prescription drug delivery	(3674)	36.0	4.9	2.2	6.3
Prescription offering	(2055)	1.6	1.0	0.1	0.7
OTC delivery	(772)	29.6	18.9	6.2	10.0
All identified drug contacts	(6501)	24.8	5.3	2.0	5.0



The frequency of verbal drug information given to patients in the three distinguished encounter categories, was found to be significant different ( $X^2=863.6$ ,  $df=2$ ). Verbal drug information was given most frequently in the case of prescription drug deliveries and OTC contacts (respectively 36.0% and 29.6% of these contacts). When offering a prescription, patients seldom received verbal drug information (1.6% of these contacts). The observed difference in verbal drug information given with prescription drug deliveries or OTCs was also significant ( $X^2=12.0$ ,  $df=1$ ).

Patients asked questions in a minority of the observed drug contacts, although large differences were found among the distinguished encounters ( $X^2= 360.2$ ,  $df=2$ ). Patients most frequently asked questions in OTC contacts (18.9%). In prescription drug delivery contacts and prescription offerings they seldom asked for drug information in the pharmacy (respectively 4.9% and 1.0%). The difference between prescription drug delivery contacts and OTCs was also significant ( $X^2=183.1$ ,  $df=1$ ) and also the difference in patients' drug questions in prescription drug delivery contacts and prescription offering contacts ( $X^2= 60.8$  ( $df=1$ )).

With respect to the other two quality aspects studied, OTC contacts most frequently included the provision of motivating information and drug character information. We found a significant difference in the observed frequencies of providing motivating drug information or drug character information in the distinguished encounters (respectively  $X^2= 108.0$  and  $134.9$ ,  $df=1$ ).

### **Patients' identity**

Patients may visit a pharmacy for themselves or for someone else, which may affect the frequency and quality of the verbal drug information they are given in the pharmacy. For this reason we have classified the observed patients in "drug users" and "non drug users", thereby referring to the drug involved. The classification was based upon the discussion between the visitor and the technician about the drug or prescription involved ("is this drug intended to be used by yourself?"). Successively the results about the frequency and quality of the verbal drug information given to these patient groups are presented in table 5.8.

Table 5.8 Patient's identity &amp; provided verbal drug information

<b>Identity</b>	<b>(n)</b>	<b>% verbal information</b>	<b>% patient questions</b>	<b>% motivating information</b>	<b>% character information</b>
Drug user	(2099)	32.4	7.3	3.0	6.1
Non drug user	(968)	36.0	8.4	3.6	10.3
Identity unknown	(3689)	16.4	3.2	0.9	2.6

A majority of the audiotaped contacts (3689 out of 6784) did not reveal patient's identity and therefore the results about this patient characteristic have to be interpreted carefully.

Significant differences were found in the frequency of verbal drug information given to the three distinguished groups of visitors ( $X^2=265.1$ ,  $df=2$ ). The more frequently provided verbal drug information to the visitors whose identity was known (either drug user or not) may be a result of technician's remarks about patient's identity, at the moment they intend to provide drug information. The observed difference in frequency of verbal drug information given to those visitors who received a drug for someone else and those who came for themselves, was found to be not significant ( $X^2=3.8$ ,  $df=1$ ).

Higher frequencies of the studied quality aspects were found in drug contacts with the so called "non drug users". Visitors who came to the pharmacy to receive a drug for someone else asked more drug questions and were given more frequently motivating drug information and drug character information compared to the "drug users". Only with respect to the provision of drug character information this difference was found to be significant ( $X^2=17.2$ ,  $df=1$ ).

### **Patient's language**

We observed patients' language and classified the patients in two categories: Dutch native speakers and non Dutch native speakers. As non native speakers participated in only a small number of contacts ( $n=120$ ), these results have to be interpreted carefully. The frequencies of verbal drug information given to both groups are shown in table 5.9.

Table 5.9 Patients' language &amp; provided verbal drug information

Language	(n*)	% verbal information	% patient questions	% motivating information	% character information
Dutch native	(6510)	23.7	5.2	2.0	4.9
Non Dutch native	(120)	43.3	10.0	0.8	8.3

\* visitors whose language was identified

The non Dutch natives were given more frequently verbal drug information than the non Dutch natives, which was found to be significant ( $X^2= 24.3$ ,  $df=1$ ). The more frequently provided verbal drug information to the non Dutch native speakers may be a result of technicians' expectations about the misunderstanding of the written information on drug labels and patient package inserts, among this group of patients.

The studied quality aspects were also observed more frequently in the contacts with the non Dutch speaking patients, although only the difference in frequencies of patients' drug questions was found to be significant ( $X^2=5.3$ ,  $df=1$ ).

### Patients' gender

Female visitors participated in 61% of all identified drug contacts while in 34.7% of all contacts male visitors were identified. In 0.8% of the contacts children were identified, while in 3.9% of the contacts visitor's gender could not be classified. Table 5.10 shows the results about the frequency and quality of the verbal drug information given to the female and the male visitors.

Table 5.10 Patients' gender &amp; provided verbal drug information

Gender	(n)*	% verbal information	% patient questions	% motivating information	% character information
Female	(4076)	24.9	6.6	2.3	5.3
Male	(2357)	23.8	3.6	1.5	4.5

\* visitors whose gender was identified

The observed frequencies of verbal drug information given to both patient groups were not significantly different. Female patients asked drug questions almost twice as frequently compared with the male patients, which difference was found to be significant ( $X^2= 25.8$ ,  $df=1$ ). Similarly, motivating information and drug character information were given more frequently to female visitors although these differences between both groups were only significant in the case of motivating drug information ( $X^2=4.8$ ,  $df=1$ ).

### 5.2.4 Pharmacists' and technicians' behavior

The results about the patient education activities such as found among the pretest collected audiotapes, refer to all analyzed drug contacts. These results concern both technicians as well as pharmacists, as the pretest collected audiotapes were not analyzed on the contribution of each individual technician and pharmacist.

The posttest collected audiotapes however were analyzed on an individual level for those pharmacies which participated in this part of the study. This analysis on an individual level was needed to study the determinants of patient education behavior. The participating pharmacies were asked to agree with this analysis of technician's individual behavior at the counter. In total 13 pharmacies agreed with this analysis. This analysis also offered an opportunity to compare pharmacists' patient education behavior and technicians' patient education behavior. Table 5.11 presents an overview of technicians' patient education behavior on the one hand and pharmacists' behavior on the other, on those behavioral aspects which were observed frequently enough to be analyzed on an individual level. This concerns the provision of verbal drug information and the receiving of patient's drug questions in the distinguished encounters. The mean scores of both groups of professionals on the studied patient education behavior variables have been compared with a two-sample T-test. The assumption that the variances of the two groups are equal was tested and found to be reasonable for these data.

Table 5.11 Pharmacists' and technicians' patient education behavior

Observed patient education behavior	pharmacists (n=14)		technicians (n=103)	
	mean	sd	mean	sd
% Verbal information/all drug contacts *	53.9	22.8	39.3	21.1
% Verbal information/prescr. drug del *	53.2	27.5	39.3	30.0
% Verbal information/OTC contacts *	54.1	41.1	35.6	35.7
% Questions/drug contacts	11.8	12.8	8.1	10.5
% Questions/prescription drug deliveries	7.8	9.3	5.6	8.2
% Questions/OTCs *	51.8	43.7	23.6	30.9

\* p<.05

The observed pharmacists provided verbal drug information significantly more frequently than the technicians. This difference between both groups was found among all kinds of encounters. In addition, pharmacists received more frequently drug questions from patients, although only in the observed OTC contacts this difference was found to be significant. Apparently these pharmacists are more actively involved in patient education than their

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technicians. This may be explained by pharmacists' motivation to participate in this research project, while pharmacists may also participate more frequently in those patient contacts which require pharmacist's advice.

### **5.2.5 Conclusions**

#### **Frequency of verbal drug information**

In the majority of the observed patient contacts about drugs, patients were not given verbal drug information. Apparently the provision of verbal drug information to patients seems to be not usual, although large differences were found in the different encounters. Most frequently information was given in prescription drug delivery contacts, which included verbal drug information in 36% of all cases. In interpreting these results one should remind that aside from the verbal drug information, patients may also receive the standardized written drug information like patient package inserts and drug labels.

#### **Differences between technicians and pharmacists**

The reported results of the pretest collected audiotapes concern all observed patient contacts, including both technicians' and pharmacists' contacts with patient. The posttest collected audiotapes were analyzed on an individual level and revealed significant differences between both groups of professionals in their patient education behavior. Patients received more frequently drug information in the case of communicating with a pharmacist, while they also asked more frequently questions in the case of being helped by pharmacists compared with the contacts with technicians. In the case of OTC contacts the observed difference in frequencies of patients' questions was found to be significant. This difference between these professionals may be related with pharmacists' participation in a specific category of patient contacts, as technicians may ask pharmacists to continue a patient contact when they meet problems at the counter.

#### **Contents of verbal drug information**

The verbal drug information given to patients in these pharmacies concentrated on instructions about how to use drugs, while less frequently the information given concerned the effects and adverse effects of drugs. Mostly the verbal drug information was given without patients' questioning, with exception of the provided information about drug product advises, drug adverse effects and drug contra indications. In this respect patients showed other drug information interests than the information they received unrequested for.

#### **Quality aspects of verbal drug information**

Patients were seldom verbally encouraged to ask questions or to give feedback on the information given to them. So the observed verbal behavior does not stimulate patients' participation in the communication process about their drugs. It seems that patient education activities at the counter consist of the provision of verbal drug information, with few attention to patients' reactions about the information given.

Patients' questions were observed in 5.3% of all identified drug contacts, although large differences were found between the different encounters. Patients asked most frequently questions in OTC contacts (18.9%). In prescription drug delivery contacts or prescription offerings they seldom asked for drug information (respectively 4.9% and 1.0%).

Motivating information was given in 2% of all drug contacts, which was expected to meet higher levels as the drug instructions given to patients were observed more frequently and could have been extended easily with additional motivating background information.

Drug character information was given not regularly: 5.0% of all drug contacts included this kind of information. Drug character information has been defined as any information about the characteristics of drug, such as it's effects, side effects, contra-indications or any advice about drug choices. The analysis of different encounters revealed this kind of information was given most frequently in the case of OTCs and less frequently in prescription drug contacts. These kinds of drug information were given frequently as a response to patients drug questions, which demonstrates patients' interests in this kind of drug information.

### **Patients' variables involved**

The frequency and quality of verbal drug information given to pharmacy visitors in these community pharmacies have been analyze on their relationship with some patient characteristics, which are patient's encounter reason, patient's gender, patient's language and patient's identity with respect to the drug involved.

The kind of contact (Over-The-Counter drug, prescription offering or prescription drug delivery) seems to be of most importance to the provision of verbal drug information given to patients. The audiotapes revealed large differences between patients who hand over a prescription, patients who receive prescription drugs and patients who purchase OTCs. The provision of verbal drug information concentrates on those contacts which concern the delivery of prescription drugs and (although less frequently) the OTC contacts. Concerning the other patient' variables studied, we found that the not Dutch speaking patients received significantly more frequently verbal drug information than the Dutch speakers; these results concern a small number of observations and therefore should be interpreted carefully. Patient's identity with respect to the drug involved and patient's gender were not related with the observed frequency of verbal drug information given to them.

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The quality aspects of the verbal drug information were also studied in relation with the observed patient characteristics. These quality aspects concern the frequency of patients' drug questions, the provision of motivating information and the provision of drug character information. Significant differences were found in the quality of the verbal information given to patients in different encounters, as in OTC contacts the quality aspects were observed most frequently. Further our analysis revealed that female patients asked twice as much drug questions than male patients; the observed difference between both groups of patients was found to be significant.

### **Implications for our study**

The results of our study are in agreement with other observational studies about the verbal drug information given to patients in community pharmacies, which have been discussed in detail in chapter 2. This agreement concerns our results about the frequency of the verbal drug information given, the kinds of drug contacts in which more or less information is given, the contents of the provided drug information and the observed quality aspects. In this view our sample of community pharmacies seems to be not considerable different from others, which increases the importance of our results about the determinants of patient education behavior and about the effectiveness of the intervention program to other community pharmacies.

The influence of patients' variables should be taken into account when we analyze technicians' patient education behavior (paragraph 5.3). One should realize differences between technicians in their patient education behavior may be due to the studied patient samples of technicians. In this respect patient's encounter reason seems to be of most importance, as large differences were found in the frequencies and the quality of the verbal drug information given to patients in the distinguished encounters. In addition patients' gender seems to be involved, as significantly more frequently drug questions were asked by the female patients. The other patient variables studied (patients' language and identity) showed to be of less importance to the frequency and quality of the verbal drug information given to patients. In addition, some of the collected data demonstrated to be rather incomplete (patients' identity) or unbalanced (patients' language) which sustained the decision to exclude these variables in further analysis.

### **5.3 Determinants of patient education behavior**

The determinants of technicians' patient education behavior have been studied by analyzing the posttest collected audiotaped data on an individual technician level. The results of technicians who participated in less than 10 drug contacts were excluded of the studied sample for reasons of reliability. In total we have analyzed the patient education behavior of

50 pharmacy technicians, who belonged to the 13 community pharmacies who agreed with the analysis of the individual behavior of their pharmacy technicians. Pharmacists' patient education behavior has not been studied (although they participated in the audiotaped patient contacts) as pharmacists are expected to be involved in the more specific patient contacts, while technicians are involved in the regular patient contacts.

The studied patient education behavior concerns the provision of verbal drug information and the frequency of patients' drug questions. We did not analyze the other quality aspects, which concern the provision of motivating drug information and the provision of drug character information, for reasons of the limited number of patient contacts which included these quality aspects.

The results about technicians' patient education behavior have been related with the collected data about three categories of variables, which concern the patients' variables, the technicians' variables and the pharmacy variables. The selected variables of each category are based upon the theories about individual behavior in organizations (chapter 3), as well as upon the results of empirical studies about patient education behavior in pharmacies (chapter 2). These three categories of variables have been used in the analysis of technicians' patient education behavior, in order to find out to what extent these different variables predict technicians' patient education behavior.

Respectively paragraph 5.3.1 and paragraph 5.3.2 present the descriptive statistics about the studied technicians' variables and organizational (pharmacy) variables. The results about the analysis of the determinants of technicians' patient education behavior, such as expressed by the provision of verbal drug information and the extent to which they receive drug questions from patients are presented in paragraph 5.3.3 (provision of information) and paragraph 5.3.4 (receiving drug questions from patients). The frequency of patients' drug questions has been viewed as a quality aspect of technicians' communication with patients at the counter. Finally paragraph 5.3.5 presents the conclusions of the analyses of technicians' patient education behavior.

### **5.3.1 Technician variables**

A first group of variables concerned the variables which are expected to be directly related with technicians' patient education behavior. According to the PRECEDE-PROCEED model, discussed in chapter 3, these variables may be viewed as predisposing, enabling and reinforcing to practicing patient education behavior. These technician variables have been studied by presenting technicians a survey about patient education in community pharmacy. In addition, the survey included questions about technicians' educational background. The complete survey is presented in appendix II. Successively the collected survey data about



these individual technicians' variables will be described. These data refer to the 50 individual technicians whose patient education behavior have been analyzed and the 13 pharmacies in which they were practicing.

### Technicians' opinions about patient education

Technicians' opinions about patient education have been measured by presenting them a list of statements with a Likert five-point scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). These statements correspond with the variables which refer to technicians' motivation, technicians' (lack of) abilities to practice patient education and technicians' experiences with patient education in the pharmacy. Table 5.12 lists the survey results.

Table 5.12 Technicians' answers on patient education statements (n=50; posttest)

Patient education.....*	Mean	Sd
belongs to my professional responsibility	4.3	0.7
is as important as other pharmacy activities	4.3	0.8
benefits proper drug use	4.4	0.8
benefits patients' autonomy	4.0	0.7
contributes to registration of customers	3.6	1.1
reduces patients' barriers to ask questions	4.2	0.9
requires more drug knowledge	3.1	1.2
requires more communicative skills	2.8	1.0
requires more privacy conditions in pharmacy	3.2	1.2
requires more clear instructions of pharmacist	2.5	1.2
is more difficult when my colleagues listen	2.3	1.1
is more difficult when the pharmacist listens	2.6	1.2
has given me positive reactions from doctors	2.9	1.2
has improved the cooperation within our team	3.0	1.1
has given me positive reactions from colleagues	3.4	1.0
has given me positive reactions from pharmacist	3.3	1.0

\* 1=strongly disagree; 5=strongly agree

Factor analyses has been used in order to reduce these statements to the basic ones that will be used in further analyses. This factor analysis has been carried out based upon the conditions to include statements with  $>.50$  factorloading and to exclude statements that load

on more than one factor (criterion  $>.40$ ). As the underlying factors may be correlated, oblique Equamax rotation has been used. Table 5.13 presents the factorloadings of the survey answers which met these selection criteria.

Table 5.13 Factorloadings of patient education statements (n=50; posttest)

Patient education....	Fc1	Fc2	Fc3	Fc4	Fc5	Fc6	Fc7
belongs to my professional responsibility	.80						
is as important as other pharmacy activities	.83						
increases proper drug use	.69						
contributes to patients' autonomy		.76					
contributes to registration of customers		.83					
reduces patients' barriers to ask questions		.78					
is more difficult when my colleagues listen			.96				
is more difficult when my pharmacist listens			.96				
requires more drug knowledge than I have				.84			
requires more communicative skills than I have				.93			
has given me positive reactions from colleagues					.92		
has given me positive reaction from pharmacist					.92		
has given me positive reactions from doctors						.64	
has improved the cooperation within our team						.89	
requires more privacy conditions in pharmacy							.84
requires more clear instructions of pharmacist							.77
variances explained by each factor	2.2	2.1	2.0	1.9	1.9	1.5	1.4

This factor analysis reduces the survey items to 7 factors, which refer to different aspects of practicing patient education in community pharmacies. These factors are to be classified into three categories, referring to technicians' motivation, abilities and experiences with practicing patient education.

Factor 1-2 concern technicians' role beliefs and outcome expectancies of patient education, from different points of view (professional oriented and patient oriented). These factors may be considered as *motivating* factors to participate in patient education activities.

Factor 3,4 and 7 represent technicians' views on the *abilities* (from different points of view) to practice patient education. The factor analysis revealed three different factors, which

concern technicians' views on the observability of their patient education behavior (factor 3), their perceived own drug knowledge and own communicative skills necessarily to practice patient education (factor 4) and the perceived organizational limitations in the pharmacy to practice patient education (factor 7).

Finally the other two factors (5 and 6) refer to technicians' positive *experiences* with practicing patient education, which are expected to be related with the sustainment of new behavior.

The internal consistency of the individual scores on the items belonging to factor 1 and factor 2 respectively, was tested with Cronbach's alfa. These scores indicate the scale reliability of the survey statements about patient education. With respect to the factors which consist of only 2 items, table 5.14 also presents Pearson correlation coefficients of the items belonging to the same factor.

Table 5.14 Cronbach's  $\alpha$  and Pearson's correlations of factor variables (n=50)

	Pearson's $r^2$	Cronbach's $\alpha$
1. Outcome expectancies and role beliefs concerning patient education	-	.76
2. Outcome expectancies of patient education	-	.71
3. Perceived observability of own patient education behavior	.92**	.96
4. Perceived own drug knowledge and communicative skills	.74**	.85
5. Experienced positive effects (feedback colleagues/pharmacist)	.81**	.89
6. Experienced positive effects (feedback doctor/team cooperation)	.42**	.60
7. Perceived organizational limitations of practicing patient education	.35*	.52

\*  $p < .05$ ; \*\*  $p < .0005$

The scores listed in table 5.14 show acceptable levels of reliability, although factor 7 demonstrates a rather low level of consistency what may be due to the difference between the items who belong to this factor. The observed reliability levels permit the application of factorscores by summing the scores on the statements which belong to the same factor.

### Technicians' educational level

The majority (78%) of the 50 technicians who participated in the study about the determinants of patient education behavior reported to be educated about drug information at school and 38% reported having received lessons about patient education. After leaving school, technicians may have attended courses organized by technicians' school, universities, by pharmaceutical companies or in the pharmacies. The results about the level of continued

education among the technicians, whose patient education behavior has been analyzed are presented in table 5.15.

Table 5.15 Attended courses, after school period (n=50)

<b>Kind of course</b>	<b>Mean</b>	<b>Sd</b>	<b>Min</b>	<b>Max</b>
Drug knowledge courses	0.6	0.9	0	3
Patient education courses	1.6	1.3	0	5

On the average these technicians attended more frequently patient education courses (1.6) than drug knowledge courses (0.6) after their school period. For separate data about the technicians belonging to the experimental group or the control group we refer to paragraph 4.4 where the studied population of pharmacy technicians which participated in the audiotapes has been described.

### 5.3.2 Pharmacy variables

In addition to the individual technician variables, one may expect an influence of organizational (pharmacy related) variables on technicians' patient education behavior. The theories discussed in chapter 3 refer to the leadership as well as the internal communication patterns, with respect to innovation processes in organizations. For this reason we were interested in pharmacists' views on patient education and the frequency of staff meetings in their pharmacy. The data about these variables have been collected by presenting the pharmacists the statements about patient education which were used in technicians' survey and to give their personal views on these statements. In addition, questions were included about the frequency and contents of the staff meetings in their pharmacy last year.

Table 5.16 presents pharmacists' scores on the patient education factors. These scores refer to the statements about patient education listed in table 5.13. The listed factorscores concern the sumscores of pharmacists' answers on the patient education statements. The higher these factorscores, the more pharmacists agreed with the statements about patient education. In case of two pharmacists their average scores have been used.

Table 5.16 Pharmacists' scores on patient education factors (n=13)

Factors	Mean	Sd	Range	Max*
1 Outcome expectancies/ role beliefs	13.5	1.3	10-15	15
2 Outcome expectancies	12.8	1.2	11-15	15
3 Perceived observability own behavior	5.0	1.1	3-7	10
4 Perceived own knowledge and skills	4.9	1.3	3-7	10
5 Experienced positive effects (colleagues)	6.6	1.9	2-9	10
6 Experienced positive effects (doctor/coop)	6.7	1.2	4-8	10
7 Perceived organizational limitations	6.7	1.4	4-9	10

\* max= strongly agree

Pharmacists' views on the patient education factors may influence technicians' patient education behavior. For this reason pharmacists' factorscores have been included in the analysis of technicians' patient education behavior. This analysis may reveal to what extent these personal views of pharmacists are related with technicians' patient education behavior such as demonstrated in the audiotaped patient contacts.

Another category of organizational variables which are used in the analysis of technicians' patient education behavior, concerns the internal communication patterns in the pharmacies of the technicians. Information about these communication patterns has been collected by

asking the pharmacists about their staff meetings. The answers about the staff meetings have been classified into 4 categories, referring to the number of the meetings they have organized in their pharmacy last year. The results are listed in table 5.17.

Table 5.17 Frequency staff meetings, organized last year (n=13)

Kind of staff meeting	Number of staff meetings			
	0	1-2	3-5	>5
All staff meetings organized in the pharmacy	0	0	5	8
Staff meetings about drug knowledge	2	4	4	3
Staff meetings about patient education	2	6	2	3

These results demonstrate staff meetings are organized rather regularly in these pharmacies, about different subjects. More frequently these staff meetings concern drug knowledge subjects than to patient education matters. The reported frequencies of staff meetings were included in the analysis of technicians' patient education behavior, as one may expect staff meetings about either drug knowledge or patient education may support technicians' in their patient education activities.

### 5.3.3 Providing verbal drug information

The results about technicians' individual behavior refer to 13 out of the 20 community pharmacies, as not all pharmacies participated in the analysis of technicians' individual behavior. The frequency of providing verbal drug information has been studied by analyzing the collected audiotaped patient contacts in 6 experimental pharmacies and 7 control pharmacies, totalling 13 community pharmacies. We have analyzed the contacts of the technicians who were involved in at least 10 patient contacts about drugs, which concerned in total 50 pharmacy technicians. Table 5.18 presents an overview of technicians' samples of patient contacts, such as distinguished by the kinds of encounters.

Table 5.18 Technicians' patient samples (n=50)

Kind of encounter	Number of encounters		
	Mean	Sd	Range
Prescription offering	16	12	0 - 64
Prescription drug delivery	30	10	6 - 104
Over-The-Counter delivery	5	4	0 - 20
All drug contacts	51	53	12 - 176

The technicians participated in on the average 51 patient contacts about drugs, which mostly concerned prescription drug deliveries. Less frequently they participated in OTC contacts and prescription offerings. We have analyzed technicians' provision of verbal drug information in all drug contacts and in the prescription drug delivery contacts. The observed frequencies of verbal drug information given in these contacts are presented in table 5.19.

Table 5.19 Technicians' provision of verbal drug information (n=50)

Kind of contact	% contacts with verbal drug		
	Mean	Sd	Score range
All drug contacts	31	12	7 - 59
Prescription drug deliveries	43	15	10 - 76

On the average these technicians provided verbal drug information in 31% of the drug contacts, while in the case of prescription drug deliveries they provided verbal drug information in on the average 43% of these contacts. However the score range of the technicians varied from 7%-59% of all drug contacts and 10%-76% of all prescription drug deliveries in which they provided verbal drug information. What could explain these differences among technicians?

At first we have considered to apply multilevel analysis, in order to distinguish between technician and pharmacy effects. This new statistical approach concerns a hierarchical linear multiregression analysis (HLM) and is based upon the assumption of a two-steps sampling, namely a first step of taking a sample of technicians and a second step of taking a sample of pharmacies. However our data are not in agreement with this assumption, as we intended to analyze the behavior of all technicians, who worked in a specific sample of pharmacies.

Based upon these considerations we decided to apply stepwise multiple regression analysis to study the determinants of technicians' patient education behavior. The stepwise regression procedure starts with no independent variables in the model and adds variables one by one to the model. At each step the variable entered is the one that maximize the fit of the model, while variables already in the model do not necessarily stay there. The analyses were carried out with the stepwise procedure, with including all independent variables and using a .05 significance level of entry and a 0.15 significance level of staying in the model. This analysis may reveal to what extent the dependent variable is explained by the independent variables. We list the stepwise entered independent variables with the corresponding  $r^2$  values and standardized regression coefficients ( $\beta$  values). The standardized regression coefficients are used in order to compare the effects of the independent variables that are measured in different units. The multiple  $r^2$  values present the portion of the observed variance of the analyzed dependent variable that can be explained by the included independent variables. Finally we have listed the F values for testing the hypothesis that all parameters are zero, except for the intercept.

Our dependent variables concern the provision of verbal drug information and the receiving of patients' drug questions. The independent variables refer to technician's patient sample (kind of encounters, percentage of female patients), technician's personal variables (their views on patient education and their educational level) and technician's pharmacy (pharmacists' views on patient education and frequencies of staff meetings).

Table 5.20 presents the results of the multiple regression analyses of technicians' provision of verbal drug information in all observed drug contacts.

Table 5.20 Frequency of providing verbal drug information in drug contacts  
Regression analysis (n=50)

Step	Independent variable	Multiple R <sup>2</sup>	F value	p>F	$\beta$ value
1	Frequency of patients' questions	.44	28.0	.0001	0.76

The frequency of patients' drug questions is the only variable which explains the differences among technicians in the provision of verbal drug information. The number of received drug questions explains almost 44% of the observed variance among the participating technicians in their frequencies of provided verbal drug information.

A separate analysis has been carried out with the data about technicians' behavior in prescription drug delivery contacts. This analysis may reveal to what extent other aspects than patients' questions may be involved in technicians' patient education behavior. In interpreting these results one should realize prescription drug delivery contacts concern a great deal of



all drug contacts. Both analyses therefore partly refer to the same patient contacts. The results of the multiple regression analysis of prescription drug delivery contacts are shown in table 5.21.

Table 5.21 Verbal drug information with prescription drug deliveries  
Regression analysis (n=50)\*

Step	Independent variable	Multiple R <sup>2</sup>	F value	p>F	β value
1	Frequency patients' questions	0.29	13.1	.001	0.53

Again the frequency of patients' drug questions is the only factor which explains differences among technicians in the extent to which they provide verbal drug information. Patients' questions explained 29% of the observed variance among technicians in the frequency of verbal drug information given to patients, while no other variables are included.

Apparently only patients' drug questions are involved in the explanation of differences in frequencies of provided verbal drug information. The predisposing, enabling and reinforcing factors studied were not included in both models, nor technicians' level of education. Also pharmacists' views on patient education were not included in the models, nor the reported frequency of staff meetings in the pharmacy.

These results emphasize the importance of analyzing the frequency of patients' drug questions in turn. What kind of individual, organizational or patient related factors are involved in the extent to which technicians receive drug questions at the counter?

#### 5.3.4 Receiving patients' drug questions

The frequency of patients' drug questions, is one of the studied quality aspects of technicians' behavior. Due to the limited number of observations on a technician level we did not analyze the other quality aspects of patient education, which concern the provision of motivating drug information and the provision of drug character information.

Patients' drug questions express a two sided communication process, which is expected to be related with technician's communicative behavior. On the average these technicians received drug questions in 8% of their patient contacts, varying from 0-29% of the observed contacts which included a drug questions. What kind of variables are involved in these differences among the technicians in the extent to which they receive drug questions?

At first we looked at patients' questions, such as observed in all audiotaped drug contacts. In paragraph 5.2 we reported about the relationship between patients' drug questions and patients' gender and the encounter reason. We found female pharmacy visitors asked more frequently drug questions than male visitors, while most frequently questions were asked in OTC contacts. For this reason we included the percentage of female visitors and the percentage of OTC contacts of each technician sample in the regression analysis of the frequency of patients' questions. The other independent variables which were included, are technicians' variables (personal views on patient education and educational level) and the variables which are related with their pharmacies (pharmacists' views on patient education and the frequency and contents of staff meetings). At first table 5.22 presents the results of the stepwise multiple regression analysis of the number of drug questions, technicians received in the drug contacts in which they participated.

Table 5.22 Frequency of patients' questions in drug contacts  
Regression analysis (n=50)

Step	Independent variable	Multiple R <sup>2</sup>	F	p>F	β value
1	Percentage of OTC contacts	0.43	27.2	0.0001	0.63
2	Technicians' F6-score (reinforcing)	0.49	4.2	NS	-0.37
3	Pharmacists' F1-score (predisposing)	0.60	9.5	0.004	0.41
4	Technicians' F2-score (predisposing)	0.66	5.4	0.03	-0.25

The independent variables together explain 66% of the variance in the frequencies of patients' drug questions, such as observed in technicians' patient samples.

The percentage of OTCs of all drug contacts in the pharmacy is the variable entered firstly and explains 43% of the observed variance among technicians in the number of drug questions they received. The variable which is entered secondly in the model is factor 6. This independent variable expresses technicians' agreement with statements about the effects of patient education on the positive feedback given by doctors and on the improved team cooperation in the pharmacy. However, this variable did not meet the .05 level of significance and the correlation between both variables is rather low (Pearson  $r=.004$ ), while also a relationship is found with the variable entered in step 3 (pharmacists' F1-score,  $r=.38$ ,  $p<.01$ ). This underlying relationship may have affect the analysis and therefore this result has to be interpreted carefully.

The variable entered in step 3 concerns pharmacists' scores on factor 1, which expresses pharmacists' role beliefs and outcome expectancies with respect to patient education. These personal views of pharmacists are found to contribute to the explanation of the observed

differences among technicians in the number of drug questions they received. Apparently the extent to which pharmacists expect positive outcomes of patient education and believe patient education belongs to their professional responsibility, is positively related with technicians' activities in patient education.

The independent variable entered latest, concerns technicians scores on factor 2. This factorscore indicates technicians' outcome expectancies of patient education, which are patients' increased autonomy, increased customer registration and reduced barriers to ask questions. Technicians' scores on this factor are negatively related with the frequency of patients' drug questions, although this variable was expected to be positively related with the outcome variable. However, the more technicians agreed with these statements, the less they received questions from patients. Possibly technicians fear these outcomes of patient education, which were meant as being positive effects of patient education to pharmacy technicians but possibly are evaluated by technicians as rather negative effects of patients' question?

We conclude the frequency of OTC contacts is the most important variable which explains differences between technicians in the number of drug questions they receive in patient contacts. These results emphasize the necessity of analyzing the frequencies of patients' drug questions in a more homogeneous sample of drug contacts. Due to the small number of OTC contacts we did not analyze technicians' OTC contacts separately, but we were able to analyze technicians' samples of prescription drug deliveries. This analysis may reveal what kind of variables predict the frequency of patients drug questions in a prescription drug delivery contacts. The independent variables to be distinguished are patient variables (percentage of female patients in technicians' sample), technicians' variables (views on patient education and education) and pharmacy variables (pharmacists' views on patient education and frequency of staff meetings). The results of this analysis are shown in table 5.23.

Table 5.23 Frequency of patients' questions in prescription drug delivery contacts  
Regression analysis (n=50)

Step	Independent variable	Multiple R <sup>2</sup>	F	p>F	β value
1	Technicians' patient education courses	.15	5.6	.02	.43
2	Technicians' F1 score (predisposing)	.28	5.4	.03	.48
3	Technicians' F2 score (predisposing)	.41	7.0	.01	-.40

The results listed in table 5.23 demonstrate the observed variance in patients' drug questions in prescription drug delivery contacts is explained by several variables. The number of patient education courses is the variable entered firstly and contributes to 15% of the observed

variance among technicians. The more technicians attended patient education courses, the more they received drug questions from patients.

The independent variable entered secondly concerns technicians' scores on factor 1, which express technicians' role beliefs and technicians' outcome expectancies of patient education on patients's drug use. Similar to the analysis of the received drug questions in all drug contacts, a negative relationship is found between the frequency of patients' drug questions and technicians' scores on factor 2. These factorscores express other outcomes of patient education, which are increased patient autonomy, increased customer registration and reduced barriers to patients for asking drug questions. The more technicians agreed with these statements about patient education, the less they received drug questions.

### **5.3.5 Conclusions**

We conclude the frequency of verbal drug information given to patients is predicted by the extent to which patients ask drug questions, which in turn depends on the percentage of OTC contacts. The analysis of patients' questions in prescription drug delivery contacts, revealed a relationship with the number of patient education courses technicians attended and their role beliefs and outcome expectancies of patient education. Technicians' expectancies about the effects of patient education on patient's drug use were positively related with the number of drug questions they received. A negative relationship was found with technicians' expectancies about the effects of patient education on an increase of patient's autonomy, increased patient registration and reduced barriers for patient's questioning. Probably technicians fear these outcomes of patient education.

The other variables studied were not included in the models which explained differences among technicians. These variables which did not contribute to technicians' behavior concern their experiences with patient education, their perceived abilities to practice patient education, the personal views of their pharmacists on patient education and the frequencies of staff meetings in the pharmacies. The consequences of these results are discussed in chapter 6.

## **5.4 Effects of the intervention program**

In this paragraph the effects of the intervention program on the verbal drug information given to patients in the community pharmacies are analyzed. We have used analysis of variances of the posttest scores of the experimental group and control group. This concerns the scores of the pharmacies of both groups on the dependent variables which indicate the frequency and quality of the provided verbal drug information, such as demonstrated in the audiotaped patient contacts of each pharmacy.

The effects of the intervention program have been determined by analyzing the variances of the posttest observed patient education behavior in the pharmacies. We corrected these data about the outcome variables for their pretest scores and the distribution of the patients' variables in the studied patient contacts. The pretest scores of the pharmacies have been included, as differences existed in the observed levels of patient education in the pharmacies participating in this study. The patients' variables which were included in the analyses concerned patients' encounter reasons, patients' questions and patients' gender.

Because not all pharmacies participated in the different activities of the intervention program, the results of the pharmacies which participated in all the activities of the intervention program have been analyzed separately. This concerns the analysis of the so called "high exposed" pharmacies, which results may contribute to the knowledge about the effectiveness of the intervention program on the verbal drug information given to patients in these pharmacies.

At first paragraph 5.4.1 presents the pretest scores of both groups of pharmacies, which may reveal to what extent the participating pharmacies demonstrate similar levels of patient education at the moment the intervention program started.

Paragraph 5.4.2 presents the results of the analyses of variances of the frequency of providing drug information, such as found in the posttest data of the experimental and control group. Similarly 5.4.3. concentrates on the quality of patient education, such as expressed by the frequency of patients' questions, motivating information provided and drug character information provided. Based upon these results conclusions will be drawn about the effects of the intervention program on the frequency and quality of the provided verbal drug information (5.4.4).

#### **5.4.1 Comparability experimental and control group**

The pretest results of both groups have been compared, with the two sample t-test (independent samples). The variances of the scores were found to be equal, thereby meeting the assumption for applying this test. The results of this comparison of pretest scores are presented in table 5.24.

Table 5.24 Pretest observed frequency of verbal drug information in different encounters  
Results of the experimental and control group (mean  $\pm$  sd)

	Exp (n=9)		Control (n=11)	
	Mean	Sd	Mean	Sd
F1 % verbal drug information/prescription offering	2.3	1.5	2.2	1.7
F2 % verbal drug information/prescription drug delivery	37.4	15.3	31.8	16.6
F3 % verbal drug information/OTC contact *	34.8	9.6	23.0	13.0
F4 % verbal drug information/drug contact	25.1	8.9	21.3	10.2
Q1 % patients' questions/drug contact *	7.0	2.4	4.7	1.5
Q2 % drug character information/drug contact	5.1	2.2	5.2	5.6
Q3 % motivating drug information/drug contact	2.6	3.1	1.3	1.9

\* p<.05

The results listed in table 5.24 reveal some differences in the frequency and quality of the verbal drug information given to patients, such as found among both groups of pharmacies before the intervention program started. Significant higher levels were found among the pharmacies of the experimental group in the frequency of verbal drug information given in OTC contacts and in the frequency of patients' drug questions (respectively  $p=.04$  and  $p=.02$ ). These differences of the pretest scores of the experimental and the control group emphasize the necessity of correcting for the pretest scores, when analyzing the effects of the intervention program.

#### 5.4.2 Providing verbal drug information

The effects of the intervention program have been studied by analyzing the posttest scores among the experimental and the control group, with correcting for the influence of the pretest scores and patients' variables. In addition separate analyses have been carried out with the results of the pharmacies that participated most frequently in the intervention program.

Before the results of these analysis of variances are shown, table 5.25 presents an overview of the posttest scores of the three distinguished groups of pharmacies. These groups of pharmacies are the so called high exposed pharmacies (n=3), all exposed pharmacies (n=9, among which the high exposed pharmacies) and the control pharmacies (n=11). Separate results are listed about the frequency of verbal drug information given in the different kinds of encounters, such as observed in the audiotaped patient contacts in these groups of

pharmacies. In interpreting these results one should realize the results of the high exposed pharmacies also participate in the listed results about all exposed pharmacies.

Table 5.25 Posttest observed frequency of providing verbal drug information in different encounters  
Results of the experimental and control group (mean  $\pm$  sd)

Dependent variable	Exp. pharmacies		Contr.pharmacies
	high exposed(n=3)	all exposed(n=9)	(n=11)
F1 % verbal info/prescription offering	7.0 $\pm$ 3.0	5.1 $\pm$ 2.9	3.0 $\pm$ 1.6
F2 % verbal info/prescr. drug delivery	52.7 $\pm$ 9.9	44.4 $\pm$ 13.9	29.2 $\pm$ 14.0
F3 % verbal info/OTC contact	59.4 $\pm$ 6.3	40.8 $\pm$ 16.6	28.5 $\pm$ 15.1
F4 % verbal info/drug contact	39.2 $\pm$ 3.1	31.9 $\pm$ 10.0	20.8 $\pm$ 7.1

Table 5.25 demonstrate large differences in frequencies of provided verbal drug information in the distinguished encounters, while also considerable differences are shown between the three pharmacy groups.

These (posttest) scores of all participating pharmacies have been analyzed on the extent to which these variance among these pharmacies is explained by their exposure to the intervention program, their pretest scores, patients' questioning and the percentage of female patients. Separate analyses have been carried out with the results about the provided information with prescription offerings, prescription drug deliveries, OTCs and the overall results about providing verbal drug information in drug contacts. These analyses may reveal the effects of the intervention program on the observed level of providing verbal drug information.

The results of these analyses which have been carried with the data of all experimental and control pharmacies are listed in table 5.26. In addition, table 5.27 presents the results about the analyses of the variances of the posttest scores of the control pharmacies and those experimental pharmacies which participated in all activities of the intervention program, the so called high exposed pharmacies. One should realize the results of these pharmacies are also included in the results of all experimental pharmacies.

We list the F values with their probability levels. These values represent the effect of each independent variable on the studied dependent variable, adjusted for the effects of the other listed variables. Both tables include the results such as found about the provision of verbal drug information in different kinds of encounters, including the analysis of the frequency of verbal drug information given in all observed drug contacts.

Table 5.26 Analysis of variance of frequencies verbal drug information in different encounters (n=20)  
Influences of exposure to intervention program (F values)\*

Dependent→ Indep↓	Prescription offerings	Prescription drug deliveries	OTC deliveries	All drug contacts
Group (control/experimental)	2.3	2.7	1.1	3.1
Covariates included:				
Pretest scores	0.1	34.4**	0.0	34.8**
Percentage patients' questions	1.7	1.8	61.7**	5.5*
Percentage female patients	0.1	0.0	0.1	0.0
Model F value	1.5	13.4**	20.9**	15.4**

\* p<.05 ; \*\*p<.0005

The results listed in table 5.26 demonstrate no influence of belonging to the experimental group on the frequency of providing verbal drug information. Apparently the intervention program did not increase the frequency of verbal drug information given to pharmacy visitors.

However, other independent variables did influence the observed posttest scores. The results about the prescription drug delivery contacts and about all drug contacts demonstrate an influence of the pretest scores. Secondly, patients' questions seems to influence the level of provided verbal drug information in the samples of OTC contacts and when all drug contacts are analyzed. The other independent variables did not influence the outcome variables and based upon these results we have to conclude the exposure to the intervention program has no significant effect on the frequency of providing verbal drug information in the experimental pharmacies.

As not all activities of the intervention program were attended, this may have limited the influence of the intervention program on the outcome variables. Some pharmacies participated in all different activities of intervention program. We have analyzed their posttest scores together with the results of the control pharmacies, in order to determine to what extent the intervention program has influenced the verbal drug information given to patients in these so called "high exposed" pharmacies (table 5.27).



Table 5.27 Analysis of variance of frequency of verbal drug information in different encounters (n=14)  
Influence of high exposure to intervention program (F values)\*

<b>Dependent→</b>	<b>Prescription</b>	<b>Prescr. drug</b>	<b>OTC</b>	<b>All</b>
<b>Indep↓</b>	<b>offerings</b>	<b>deliveries</b>	<b>deliveries</b>	<b>drug contacts</b>
Group (experimental/control)	10.5*	8.4*	3.0	8.8*
Covariates included:				
Pretest scores of pharmacies	1.5	37.8***	0.0	17.9**
Percentage of patients' questions	0.1	0.7	33.6***	0.5
Percentage of female patients	0.1	0.6	1.6	0.2
Model F value	<b>3.4</b>	<b>17.2***</b>	<b>20.8***</b>	<b>14.3***</b>

\* p<.02 ; \*\*p<.005; \*\*\*p<.0005

The results listed in table 5.28 reveal an influence of belonging to the experimental group on the frequency of verbal drug information in the case of prescription drug contacts and when the results of all drug contacts are analyzed (all p<.02). Here again the pretest scores are related with the posttest scores, which was found to be significant in the case of prescription drug delivery contacts and when all drug contacts were analyzed.

The intervention program has not affected the verbal drug information given in OTC contacts. Patients' questions are found to be more important in this respect, as this is found to be significant related with the frequency of verbal drug information in OTC contacts p<.0005).

Based upon these results, we conclude that the intervention program has influenced the frequency of providing verbal drug information in prescription drug contacts in those pharmacies which participated in all activities of the intervention program. The provision of verbal drug information in OTC contacts however was found not to be influenced by the intervention program.

### 5.4.3 Quality of verbal drug information

The quality of the verbal drug information has been studied by analyzing the audiotaped pharmacy patient contacts on the frequency of patients' drug questions, providing drug character information and providing motivating drug information.

Patients' questions have been chosen as a quality aspect which expresses the extent to which technicians invite patients to participate in the communication process. Patient's participation in the communication process is needed to discover their needs for drug information.

Drug character information concerns the information about the effects and adverse effects of drug therapy, which may support patients in their decisions about drugs. Patient surveys demonstrated patients' interests in drug character information, while at the same time they seldom receive this kind of information in community pharmacies.

Motivating drug information concerns the background information that is given with drug instructions, which is expected to motivate patients to use their drugs properly.

First table 5.28 lists the posttest scores among the highly exposed, all exposed and the control pharmacies. Afterwards the results of the analysis of variances of the posttest observed quality aspects in the pharmacies will be presented. Table 5.29 presents the analysis of the posttest scores of all experimental pharmacies and control pharmacies, while table 5.30 presents the analyses of the scores of the high exposed experimental pharmacies and the control pharmacies.

Table 5.28 Posttest results about quality providing verbal drug information  
Experimental and control pharmacies (n=20)

Dependent variable	Experimental		Control
	high exp(n=3)	all(n=9)	(n=11)
Q1 % patients' questions/drug contact	12.8 ± 5.9	9.4 ± 4.7	5.5 ± 2.7
Q2 % drug character information/drug contact	11.6 ± 2.9	7.7 ± 4.8	2.8 ± 2.1
Q3 % motivating drug information/drug contact	1.8 ± 0.6	2.5 ± 2.6	1.4 ± 1.7

The results about the studied quality aspects of verbal drug information demonstrate some differences between the distinguished groups of pharmacies. Whether these differences are related with pharmacy's participation in the intervention program will be determined by the analysis of the variance of the scores of each pharmacy on these studied quality aspects.

Table 5.29 present the results of the analyses of variances of the posttest scores on these quality aspects of verbal drug information, such as found among the complete experimental and the control pharmacies. Separate analyses have been carried out with the posttest scores of the high exposed pharmacies including the scores of the control group and the results are listed in table 5.30.

Table 5.29 Analysis of variance of observed quality of verbal drug information (n=20)  
Influence of exposure to intervention program (F values)\*

<b>Dependent→</b> <b>Indep↓</b>	<b>Patients'</b> <b>questions</b>	<b>Drug character</b> <b>information</b>	<b>Motivating</b> <b>information</b>
Group (experimental/control)	0.5	3.4	0.0
Covariates included:			
Pretest scores of pharmacies	6.5*	1.5	5.6*
Percentage of patients' questions	#	8.5*	0.4
Percentage of female patients	0.7	0.1	1.6
Percentage of OTC contacts	2.2	2.4	#
Model F value	8.5**	5.0*	1.8

\* p<.05 ; \*\*p<.005; # not included

The results listed in table 5.29 demonstrate belonging to the experimental or the control group is not related with the observed quality of the verbal drug information in these pharmacies. Apparently the intervention program did not affect these quality aspects of the verbal drug information given to patients. In the case of patients' drug questions and the provision of motivating information, the pretest scores are related with the observed posttest scores. Another independent variable concerns patients' drug questions which were significantly related with the level of provided drug character information.

The level of participation in the intervention program differed however, what may have limited the effects on the studied quality aspects. As some pharmacies participated more frequently in the activities of the intervention program compared to other pharmacies, we have analyzed their posttest scores separately together with the results of the control pharmacies (table 5.30).

Table 5.30 Analysis of variance of the quality of verbal drug information (n=14)  
Influences of high exposure to intervention program (F values)\*

<b>Dependent→</b> <b>Indep↓</b>	<b>Patients'</b> <b>questions</b>	<b>Drug character</b> <b>information</b>	<b>Motivating</b> <b>drug information</b>
Group (experimental/control)	2.3	10.9*	0.4
Covariates included:			
Pretest scores pharmacies	1.4	0.4	4.0
Percentage of patients' questions	#	5.0	1.0
Percentage of female patients	1.9	4.0	1.7
Percentage of OTC contacts	2.3	0.3	#
Model F value	<b>9.1**</b>	<b>10.7**</b>	<b>1.0</b>

\* p<.02 ; \*\*p<.005;

The results listed in table 7.30 demonstrate an influence of belonging to the experimental group or the control group on the frequency of providing drug character information to pharmacy visitors. No effects were found on the other two quality aspects studied, which concern patients' questions and the provision of motivating information. Apparently the intervention program did not influence these quality aspects of the verbal drug information given to patients.

#### 5.4.4 Conclusions

The results among all experimental pharmacies demonstrate no effects of the intervention program on the frequency and quality of the verbal drug information that is given to patients. At first glance one should conclude that the interventions did not increase the level of patient education in these pharmacies.

The results of the highly exposed pharmacies however demonstrate an influence of the intervention program on both the frequency and the quality of the verbal drug information in these pharmacies. This group of pharmacies attended more frequently the different activities of the intervention program compared to the other pharmacies of the experimental group.

One should remind the pretest results of the highly exposed pharmacies already showed higher levels compared to the other experimental pharmacies, which concerned the frequency of verbal drug information in OTC contacts and the frequency of patients' drug questions. In other words, the differences between the pharmacies of the experimental group have

increased after they have participated in the intervention program. The consequences of these results about the effects of an intervention program on the verbal drug information given to pharmacy visitors are discussed in chapter 6.

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## **6 DISCUSSION AND RECOMMENDATIONS**

### **6.1 Introduction**

In this chapter the results of our study will be discussed and we will come to the conclusions of our study. First we will list the research questions on which we concentrated.

1. What are the determinants of technicians' patient education behavior, such as expressed by the provision of verbal drug information to patients ?
2. What are the effects of an intervention program on patient education activities in community pharmacies, such as expressed by the verbal drug information given to patients?

The methodological aspects of our study will be discussed in paragraph 6.2. Remarks will be made about the studied population and the collected data which have been used to answer the research questions.

In paragraph 6.3 conclusions will be drawn about the results of our study, starting with the conclusions about the observed level of patient education in the studied community pharmacies. In addition, conclusions will be drawn about the determinants of this patient education behavior. Finally this paragraph will present the conclusions about the effects of the intervention program on the observed patient education behavior.

The consequences of the results of our study are discussed in paragraph 6.4. First the implications of our study to community pharmacy practice on the one hand and to pharmacy policy makers and educators on the other are discussed. Secondly the results will be discussed on their consequences to theories about individual behavioral change and organizational change. Finally suggestions will be given in this paragraph for further research activities with regard to patient education in community pharmacy practice.

### **6.2 Methodological aspects**

In this paragraph the methodological aspects of our study will be discussed. Successively the studied population and the collected data will be discussed in detail.

#### **Studied population**

The participating pharmacists were selected from a population of pharmacists, who had followed one or more postgraduate courses about patient education. These pharmacists agreed to participate in a

project which had the objective to improve the level of patient education in their pharmacies. So the participating pharmacists were all educated in the field of patient education and had shown to be interested to develop patient education in their pharmacies. This group of pharmacists was chosen, as both the one-year lasting intervention program and the data collecting by audiotapes required high levels of motivation from the participating pharmacists.

Originally we started with 21 community pharmacies, but one pharmacy withdrew as the technicians disagreed with the audiotaped data collecting. As a consequence the results from the intervention program concern 20 community pharmacies (9 experimental and 11 control pharmacies). In these pharmacies some technicians did not participate in the audiotapes as they reported to feel uncomfortable while being audiotaped in the pharmacy.

The individual behavior of technicians has been analyzed with support from the participating pharmacists, who could recognize the voices of their technicians. As not all pharmacists agreed to go along with this part of the study, the results about the determinants of patient education behavior are obtained from 13 out of the 20 community pharmacies. This concerns 6 pharmacies belonging to the experimental group and 7 pharmacies of the control group.

So the pharmacists, which participated in our study had all been educated about patient communication and had shown to be highly motivated to develop patient education in their pharmacies, while they were also willing to be observed. These pharmacists may be viewed as the so-called innovators among their professional group and we expect higher levels of patient education in their pharmacies compared with the average Dutch community pharmacy. Similarly, the technicians are those persons who agreed to being audiotaped and one may expect higher levels of patient education among these professionals compared to their colleagues who appeared to feel uncomfortable in being audiotaped.

Our results about the determinants of technicians' patient education behavior may apply to other technicians, who are willing to be audiotaped at the counter. The results about the effects of the intervention program may be applied to those pharmacies whose pharmacists and technicians are willing to participate in all different activities of the intervention program. One should realize this condition of willingness to work on patient education continuously will not be met in every community pharmacy nowadays.

### **Collected data**

We have analyzed audiotaped patient contacts on the provision of verbal drug information given to patients in community pharmacies. These audiotapes did not reveal to what extent patients were also given written drug information, while receiving drugs. In the Netherlands patient package inserts are included in all retailed drug packages (prescription drugs and OTCs), while prescription drugs always contain drug label instructions. So the studied patient education behavior concerns the verbal drug information given to patients in pharmacies, which is given in addition to written drug information in most cases.



As we have used audiotaped data our results concern the verbal part of the communication process. We were not able to analyze the nonverbal part of the communication process, which is known to express people's emotions and opinions about each other as well as about the subject of their communications. This has limited the opportunity to study patients' views on the information given to them and patient's perceived quality of the provided drug information and the communication process, such as expressed by their nonverbal behavior. Did they understand and accept the information given to them and did this information satisfy their needs for drug information? Possibly patient's nonverbal behavior revealed information which may have been useful to answer these questions.

The audiotapes provided detailed information about the kinds of patient contacts and the provided drug information, but they did not include information about some other variables which may affect the communication process, such as patient's age, patient's level of education and the prescription (new or refill) or drug involved. However, one may expect the studied patient samples of the participating technicians will all consist of young and old patients, refills and new prescriptions and different kinds of drugs.

The determinants of patient education behavior have been studied by analyzing patient contacts of 50 technicians, who practiced in 13 community pharmacies. On the average these technicians participated in 50 patient contacts about drugs, which included the provision of verbal drug information in a minority of these contacts. This number of observations should be taken into account when interpreting the results about the determinants of technicians' patient education behavior. Similarly the effects of the intervention program should be interpreted carefully, due to the restricted number of pharmacies participating in our study.

The determinants of patient education behavior have been studied by relating the data about technicians' patient education behavior with technicians' survey answers. One should realize the limitations of survey collected information, such as people's tendency to provide information which is socially desirable. This may have influenced technicians' answers about their views on and experiences with practicing patient education in their pharmacy. In addition, one should realize the results about the enabling and reinforcing factors with respect to patient education express technicians' perceptions of these factors. Observational studies are needed to collect information about the actual presence of these factors in these pharmacies. Finally, we should keep in mind that the collected information about technicians' education and the staff meetings in their pharmacies, concerned the frequencies of these activities, whereas no attention was paid to the quality of the attended courses and meetings. Therefore the results about the determinants of technicians' patient education behavior should be interpreted carefully.

We have studied the determinants of technicians' patient education behavior. These results may not be translated automatically to pharmacists as both groups differ in their professional responsibilities and educational backgrounds, which may have consequences to the determinants of their patient education behavior. Technicians are supervised by pharmacists and have received less education about

drugs than pharmacists. These differences between both groups of professionals may affect the determinants of their patient education behavior.

Finally one should realize we have used observational data, by collecting audiotapes. The audiotapes may have influenced patients' and technicians' behavior. Some technicians experienced the audiotaped recording as being annoying and those feelings may have decreased their activities in communicating with patients at the moment they were being audiotaped, whereas other technicians may have increased their patient education activities at the counter at the moment they were being audiotaped.

Of course we were aware of these limitations of our data. We preferred to use observational data to other data collecting methods like surveys or diaries, which are known to be limited by influences of social desirability and memory effects. Another reason for collecting audiotapes was the experienced lack of observational data about patient education in Dutch community pharmacies. In this respect, the collected audiotapes reveal interesting information to all who are engaged in patient education in Dutch community pharmacy.

## **6.3 Conclusions**

### **6.3.1 Observed level of patient education**

The studied patient education concerns the provision of verbal drug information, such as observed in audiotaped patient contacts in 20 community pharmacies. What can be concluded about the frequency and quality of the verbal drug information given to patients in these pharmacies, such as observed before the intervention program started?

#### **Frequency**

In one quarter of all observed drug contacts verbal drug information was given to patients. Large differences existed among the different kinds of encounters. The prescription drug deliveries and OTC contacts included the provision of any verbal drug information in one third of these cases, while in prescription offering contacts verbal drug information was seldom given. We also found differences among the pharmacies: the observed frequencies of verbal drug information given to patients in these pharmacies varied from 12-62% of their prescription drug delivery contacts and 8-67% of their OTC contacts. The posttest results were analyzed on an individual level and revealed also differences between pharmacists and technicians: their mean scores on the verbal drug information given with prescription drug deliveries turned out to be  $53 \pm 28\%$  (pharmacists) and  $39 \pm 30\%$  (technicians) of these contacts.

When interpreting these results about the verbal drug information, one has to realize patients are also given patient package inserts when receiving retailed prescription drugs or OTCs, while in the case

of prescription drugs they are also given drug label instructions and may have received drug information from doctors. The observed frequency of the verbal drug information given to patients has to be evaluated with this background information in mind. Different arguments are to be mentioned to provide verbal drug information to patients in the pharmacy. One reason could be patients' problems in understanding and applying the written drug information, while verbal drug information may also be given to motivate patients to follow the instructions given to them. Verbal drug information may be needed to answer patients' individual needs for additional drug information. As the pharmacy is the last place patients visit before they start using their drugs, patients' individual needs for additional drug information should be answered in the pharmacy. As patients' informational needs differ, their drug questions have to be known to be able to provide the information they need. However, we found verbal drug information is mostly given without patients' questions. It seems these pharmacies do not fully take advantage of the possibility to influence patients' drug use by providing verbal drug information, which is adjusted to the individual needs for additional drug information.

### **Contents of the verbal drug information**

The provided drug information concentrated on instructions about drug use. The results demonstrated that 66% of the verbal drug information concerned dosage instructions. Other drug information given were instructions about the time of application (22% of all verbal drug information), drug administration (18%), drug activity (16%) and product advice (12%). Seldom patients were given verbal information about the beneficial effects and adverse effects of drugs.

The observed verbal drug information is rather standardized as it concerns mainly the repeating of drug label instructions. This may be counterproductive in discussing patients' drug problems and meeting their informational needs about drugs. Patients' surveys demonstrate patients' interests in information about different drug aspects, among which drug instructions as well as drug effects and drug side-effects. Compliance studies show high levels of noncompliance in relation with patients' lack of knowledge and motivation. Patients' motivation may be influenced by providing information about the necessity of the drug therapy, the drug effects which may be expected and about how to deal with drug adverse effects.

We conclude that the verbal drug information given to patients in these pharmacies concentrated on drug use instructions. This kind of information may not be fully adjusted to patients' individual needs for drug information, such as demonstrated in consumer surveys and in patients' drug questions addressed to drug information centers.

### **Quality**

Originally five criteria were chosen to study the quality of the observed patient education behavior, among which technicians' verbal encouragement to induce the patients to ask their drug questions or to give feedback on the information given to them. However, this communicative behavior, which stimulates a two-sided communication process, was seldom observed on the audiotapes. In this respect,

the pharmacies demonstrated low levels of quality in the communication processes with patients and no further attention was given to these aspects. The remaining quality criteria which have been studied and used in further analysis, are: the receiving of patients' drug questions, the provision of motivating drug information (background information with the drug instructions) and the provision of drug character information (information about the effects or adverse effects of drugs).

#### *Patients' drug questions*

In about 5% of all drug contacts, patients asked questions about drugs. About one quarter of the provided verbal drug information was given as a response to patients' drug questions, so if verbal drug information is given at all, this is mostly given without patients' questioning. The score range of the participating pharmacies was 2-13% of all drug contacts, which included patients' drug questions. The kind of encounter was found to be related with the observed frequency of patients' questions, as patients asked more questions in OTC contacts than in prescription drug contacts: respectively 19% and 5% of these encounters included drug questions. Apparently patients show their informational needs more frequently in Over-The-Counter (OTC) contacts than in prescription drug contacts, which may be related with patients' participation in the drug choice process in the case of OTCs. Women asked almost twice as many drug questions than men, which was also found in research about doctor patient communication (chapter 2). According to the results of other studies, patients' questions in the pharmacies concentrated on drug recommendations in the case of OTCs and drug instructions in prescription drug delivery contacts.

Patients' drug questions have been studied as an indicator of their participation in the communication process. This participation is essential to provide the information which is needed by the individual patient. However, in only a minority of the drug contacts patients asked for additional drug information. Our results about the frequency and contents of patients' drug questions differ from results of consumer surveys and overviews of patients' drug questions received by drug information centers, which both demonstrate patients' interests in the effects and side effects of drugs. It seems that patients only partly show their informational needs in the pharmacy, which may have different reasons. One reason for not asking drug questions in the pharmacy could be that some drug questions arise after reading patient package inserts or after using the drugs. Possibly these drug questions are asked in telephone calls with the pharmacies or they may call the national drug information telephone service, such as organized by the professional organization of pharmacists. Another explanation of the small number of drug questions could be the limited privacy conditions at the counter or technicians' lack of time to communicate quietly with patients. Possibly patients do not want to ask their drug questions in the pharmacy, for reasons of feeling not welcome in asking drug questions or having had negative experiences with asking drug questions. These various reasons may participate in patients' behavior at the counter, such as observed in these pharmacies.

Based upon the observed frequency and contents of patients' drug questions, we conclude that patients only partly demonstrated their informational needs about drugs in these community pharmacies.

### *Drug character information*

Drug character information concerns information about the characteristics of drugs, among which information about the drug indication, the drug effects, the drug contra-indication, drug combinations and the drug side-effects. In about 5% of all drug contacts this kind of drug information was given verbally to patients. The score range among the participating pharmacies appeared to be 1-20% of all drug contacts which included the provision of verbal drug character information. Other studies also report low levels of verbal information about the effects and adverse effects of drugs in community pharmacies, whereas drug information centers frequently receive questions about these drug aspects. The low frequency of providing drug character information in these community pharmacies may have different backgrounds. One explanation could be patients' reserves in asking drug questions, which have been discussed earlier. In addition, one could think about technicians' drug knowledge or about technicians' fear about the harmful effects of providing information about the drug side effects on patients' compliance.

We conclude that the provision of verbal information about the effects and side effects of drugs seems to be uncommon in these pharmacies. As a consequence, patients' needs for drug information may only partly be fulfilled by the verbal drug information given to them in these community pharmacies.

### *Motivating information*

On the average, 2% of all drug contacts included verbal drug information which was interpreted as motivating information, whereas the pharmacies showed a score range of 0-9% of their drug contacts. Motivating information concerns background information about drug instructions, like information about the consequences of not following the instructions given or about the benefits of following the drug instructions. Our description of motivating information did not include remarks such as "your doctor wants you to take this drug" or "this is important to you".

We conclude that a very small percentage of the observed drug contacts included motivating drug information. One may regret these results, as the majority of the verbal information concerned drug instructions, which could have been accompanied by motivating background information rather easily.

### **Conclusion about observed patient education behavior**

For the time being patient education in community pharmacies mainly concerns a one-way communication process, in which technicians tell patients how to use their drugs and we rather should talk about patient instruction than about patient education. The observed technicians and pharmacists seem not to take the full profits of the personal communication process, which provide an opportunity to discover patient's individual needs for verbal drug information at the moment they visit the pharmacy. This verbal information may concern an explanation of the standardized written drug information, additional background information, reinforcement of the information given by doctors in medical encounters, or a support in taking the right decisions about drug use. It seems patients do not

have fully access to the drug information expertise in Dutch community pharmacies and which might offer them the support they need to use their drugs properly.

### **6.3.2 Determinants of patient education behavior**

We studied the extent to which the provision of verbal drug information by technicians is predicted by technicians' variables, the frequency of staff meetings in the pharmacies, pharmacists' views on patient education and technicians' patient samples. This analysis was carried out with the collected data of the 50 technicians whose individual behavior has been studied. What can these results tell us about the determinants of the studied patient education behavior?

#### **Providing verbal drug information**

Technicians' frequencies of providing verbal drug information in drug contacts is predicted by the extent to which patients ask drug questions. Although the verbal drug information was mostly given without patients' questions, differences among technicians were explained by the number of questions they received. Patients' questions explained 44% of the observed variance among technicians in their verbal drug information activities. When comparing technicians' samples of prescription drug delivery contacts only, the observed differences again were explained by the extent to which technicians received drug questions in these contacts. All other variables studied did not contribute to the explanation of the observed variance among technicians in the extent to which they provided verbal drug information. Neither pharmacists' and technicians' views on patient education or technicians' educational level, nor the communication patterns in the pharmacy were involved in the extent to which technicians provided verbal drug information.

This lack of a relationship between technicians' behavior and their personal characteristics as well as the organizational (pharmacy) characteristics, may be related to the contents of the verbal drug information which mainly concerns drug label instructions. Probably this rather standardized patient education behavior which consists of repeating drug label instructions, does not require technicians' personal involvement or organizational conditions. Possibly the analysis of the frequencies of patients' drug questions, such as received by technicians, reveals more about the determinants of technicians' patient education behavior.

#### **Receiving patients' drug questions**

The number OTC contacts in the studied samples was found to explain 43% of the observed differences among technicians, in the number of drug questions they received from patients. Further analysis of only prescription drug delivery contacts revealed that several technicians' variables were related with technicians' patient education behavior. Technicians who received more drug questions reported to have attended more patient education courses. In addition, technicians' outcome

expectancies and role beliefs were involved in the explanation of variety among technicians in the number of drug questions they received. The more technicians believed patient education contributes to proper drug use and may be viewed as their responsibility, the more technicians received drug questions. Finally, other outcome expectancies were related with the observed frequency of patient questions negatively. These outcome expectancies concerned the influence of patient education on patient's autonomy, on reduced barriers for patients' questions and on customers' registration. The more the technicians were convinced of these effects of patient education, the less they received drug questions. Maybe technicians fear these outcomes of patient education? These feelings about patient education may affect their communicative behavior thereby discouraging patients to ask drug questions.

No relationship was found between the number of drug questions technicians received and the other variables studied. Nor technicians' perceptions of the enabling and reinforcing factors with respect to patient education, the number of drug information courses they had attended and their experiences at the counter were related with the number of drug questions they received. We did not find a relationship between the number of drug questions each technician received and the frequencies of staff meetings in their pharmacy or pharmacists' views on patient education either.

### **Conclusions about determinants of patient education behavior**

The provision of verbal drug information to patients in community pharmacies is predicted by the extent to which patients ask drug questions. Patients' drug questions in turn, are predicted by the percentage of OTC contacts in the studied patient samples.

The analysis of the prescription drug delivery contacts revealed that patients asked drug questions more frequently when communicating with technicians who had attended more patient education courses, who demonstrated higher levels of outcome expectancies and role beliefs about patient education and expected less the negative outcomes of patient education.

We found no relationship between technicians' behavior and several other technicians' variables, while no relationship was found with pharmacists' views on patient education and the frequencies of staff meetings in the pharmacy either.

### **6.3.3 Effects of intervention program**

The effects of the intervention program on the provision of verbal drug information have been studied by analyzing the variances of the posttest scores of 20 community pharmacies, of which 9 participated in a one year lasting intervention program, while the remaining 11 pharmacies participated in the control group. The pretest scores and patients' variables of the studied pharmacies were included in the analyses of their posttest scores, to increase the precision of determining the effects of the intervention program on the frequency and quality of the provided verbal drug information. Separate

analyses have been carried out with the results of the 3 pharmacies that participated most frequently in the intervention program, the so-called highly exposed pharmacies.

At first glance it seemed that the intervention program was not effective in influencing the level of patient education in these community pharmacies. When we analyzed the posttest scores of the complete experimental group, the results demonstrated no effects of the intervention program. The results of the highly exposed pharmacies however demonstrated an influence of the intervention program on both the frequency and the quality of the verbal drug information. Increased levels of verbal drug information with prescription drug deliveries were observed, including increased frequencies of drug character information. No effects were found on the frequency of verbal drug information in OTC contacts, on the observed number of patients' drug questions and on the provision of motivating drug information. These results are in agreement with the developed patient education activities in these pharmacies, which concerned the provision of verbal drug information about prescribed asthmatic drugs or prescribed antihypertensive drugs. The different parts of the intervention program together have contributed to the increased frequency of provided drug information. These results indicate the effects of the intervention program, which were observed 3 months after the intervention program had been finished.

We conclude that the intervention program increased the frequency and changed the contents of the verbal drug information with prescription drugs deliveries in those pharmacies, where both the technicians and the pharmacists participated in the complete intervention program.

## **6.4 Consequences of our results**

In this paragraph we will consider the consequences of the results about the observed patient education behavior, the determinants of this behavior and the process of developing patient education in community pharmacies. Firstly, attention is paid to the consequences of these results for community pharmacy practice and for pharmacy policy makers and educators. In addition, the results will be interpreted as to their consequences for the theories about individual behavioral change and organizational change, such as discussed in chapter 3. The last part of this paragraph lists new research questions, which are based upon the results of our study.

### **6.4.1 Community pharmacy practice**

#### **Objectives of verbal drug information**

Verbal drug information should focus on the drug information, which is needed by individual patients in order to use their drugs properly. In this respect verbal information may be needed to explain or to complete the standardized written drug information or to motivate patients to follow the drug instructions on drug labels. Patients' needs for additional verbal drug information in the pharmacy are



demonstrated in consumer surveys and in patients' drug questions addressed to drug information centers.

As patients differ in their informational needs, their individual drug questions have to be known to provide the information they need. However, patients asked questions in a minority of the observed drug contacts. These results demonstrate the necessity to evaluate the circumstances in the pharmacy concerning patients' drug questions. Possibly the privacy conditions in the pharmacy have to be improved to facilitate patients' questioning. Another possibility is to encourage patients expressly to ask their drug questions in the pharmacy. Patients' drug questions may be encouraged when prescriptions are being offered by the patients, as the latter may feel less reluctant to demonstrate their drug problems and doubts prior to the receiving of the drugs which have been already prepared. When patients agree with the drug therapy, verbal drug information may be used to emphasize the drug label instructions and to provide the additional background information. When communicating with patients, one may ask patients to give feedback on the information given to them. This quality control instrument may increase the positive effects of verbal drug information on patients' drug use and patients' satisfaction with this pharmacy service.

We would like to recommend to pharmacists and technicians to consider the verbal drug information given to patients in their pharmacy and to decide about the specific objectives of this kind of drug information. These objectives provide a guideline for technicians in communicating with patients about drugs in a more personal way than just repeating drug label instructions.

### **Development of patient education activities**

We found that the increase of patient education in community pharmacies asks for interventions directed to both the technicians and the pharmacists.

Technicians' patient education behavior depends on the extent to which patients ask drug questions. As patients' questions seem to be the key to increased levels of verbal drug information in community pharmacies, patients will have to be encouraged to ask their drug questions in the pharmacy. A first possibility to increase the number of drug questions concerns technicians' communicative behavior. Patients asked most frequently questions to technicians who had higher outcome expectancies (compliance) of patient education, stronger beliefs about their professional responsibility in patient education, who more frequently attended courses about patient education and less agreed with the negative outcomes of patient education. These technicians' variables need attention when efforts are made to improve technicians' communicative behavior. Technicians' positive outcome expectancies of patient education may be increased by presenting them the results of studies about the effects of patient education on patients' drug use. Technicians' negative outcome expectancies of patient education concerned increased patient autonomy, increased customer registration and decreased barriers for patients to ask drug questions. These outcome expectancies were negatively related with the number of drug questions technicians received. It seems technicians fear these outcomes of patient

education. These outcome expectancies are to be influenced by providing technicians the support they need at the moment they meet problems while practicing patient education, for example answering difficult drug questions or patients who do not agree with technicians' instructions or advice. In addition, patient education courses may support technicians by supplying the instruments which facilitate the process of communicating with patients at the counter. Next to technicians' communicative behavior, the circumstances in the pharmacy may also influence patients to ask their drug questions. One may think about improved privacy conditions in the pharmacy, printed remarks ("ask your pharmacy") on the written drug information like drug labels and so-called drug information hours in the pharmacy and/or by telephone. These activities may be viewed as conditions which facilitate patients to ask for drug information in the pharmacy. Finally, patients' positive experiences with patient education in the pharmacy may be of most importance and should be a reinforcement to patients to ask their drug questions again in the pharmacy.

Pharmacists' expertise is another area which may need attention. It goes without saying that pharmacists should have expertise in practicing patient education, in order to be able to supervise technicians' in practicing patient education and to act as role models to technicians. Secondly, pharmacists should be able to plan new patient education activities and to prepare their organization for the implementation of these activities. Staff meetings are needed to evaluate the contents and quality of the verbal drug information given to patients on the objectives of this kind of drug information. In these staff meetings as well as in individual contacts technicians' motivation, abilities and experiences with respect to patient education should be discussed. These professional contacts are most successful when technicians feel free to report their doubts, their inabilities and their negative experiences with patient education and ask for the support they need. We conclude that these activities require pharmacist's expertise in patient education, planning activities and managing innovation processes in the pharmacy.

Finally, some remarks about the length of time which will be needed to develop patient education activities in community pharmacies. The introduction of an innovation requires serious attention in the first stage of the innovation process, which is called the initiation stage and concerns the acceptance of the innovation by the members of the organization. This stage of the innovation process requires much attention in organizations like pharmacies which are rather centralized with a high level of formalization and a low level of complexity. As a consequence time is needed to pass through this stage of accepting the innovation, particularly with an innovation like patient education which requires technician's personal involvement. In this view patient education differs from technological innovations, like a new procedure to prepare eye-drops, which is expected to be accepted and implemented in the organization much more easily.

Based upon this knowledge, we recommend pharmacists to consider their expertise in initiating and implementing patient education activities in their pharmacy. When starting new activities they should be aware of the fact that it takes time to realize technicians' acceptance of these activities and their co-operation.

### **6.4.2 Education and professional organizations**

The activities in community pharmacies have changed from product care to patient care, which has consequences for educators and professional organizations of pharmacists. Nowadays pharmacists and technicians are expected to be involved in patient education about drugs, being one of their professional activities. In this respect, one may advocate schools for pharmacists and schools for technicians to select their students on these interests and subsequently they should teach students how to communicate with patients effectively.

Schools for technicians have recently started to introduce patient education courses in their curriculum. These courses should pay attention to the positive and negative outcomes of patient education, as these were found to predict technicians' patient education behavior. One could think of presenting them the results of studies about the effects of patient education on patients' drug use, or patients might be invited to tell the students about their experiences with drug use and about their needs for drug information. Lessons about patient education should also pay attention to the negative outcome expectancies of patient education, such as increased patient autonomy, increased customer registration and reduced barriers to ask questions. These side effects of patient education may be feared and therefore have to be included in communication courses. Technicians' resistance towards patients' drug questions may limit the effects of communication courses. Therefore this resistance needs attention before learning students how to encourage patients to feel free to ask their drug questions in the pharmacy.

Nowadays schools for pharmacists teach their students how to communicate with patients effectively. These courses provide the students the instruments to communicate with patients verbally and written. As these courses are rather limited in time, little attention is paid to the process of supervising pharmacy technicians in their efforts to practice patient education in the pharmacy. As pharmacy schools have the responsibility to prepare pharmacists for their future task, they should pay serious attention to pharmacists' management skills as this is expected to determine whether pharmacies are innovating organizations or not.

The professional organization of pharmacists (Royal Dutch Association for the Advancement of the Pharmacy) has developed several initiatives in the field of patient education, among which the provision of written and audiovisual drug information and the drug telephone service. In addition, standards have been developed about when, what and how pharmacists are expected to do or not to do in the field of patient education. These standards will be used in the medical audit activities of the professional organization of pharmacists. In the near future pharmacists will be supported by the so-called quality circles which are organized regionally. These groups of practicing community pharmacists are to concentrate on exchanging experiences and discussing the problems pharmacists met while they work on the different activities in their pharmacy. One may expect patient education to be one of the subjects which are to be discussed in these meetings.

Finally, one should realize these listed activities of pharmacy schools and the professional organization of pharmacists support only those pharmacists who are motivated to practice patient education, whereas the less motivated pharmacists will not be able to make use of these services. Other instruments are needed to implement patient education in their pharmacies. These pharmacists are expected to be involved in patient education at the moment their colleagues put social pressure by means of medical audit, certification or direct incentives with respect to patient education activities.

### **6.4.3 Consequences for research**

In this paragraph we will first interpret the results of our study as to their consequences for theories about individual behavior (and behavioral change) and organizational change. Secondly, attention will be paid to further research questions about patient education in community pharmacy.

#### **Theories about individual behavior**

The results about the determinants of patient education behavior in the pharmacy demonstrated that patients' behavior in asking drug questions is the most important factor to explain differences in the verbal drug information technicians provide to patients at the counter. In this view our results do not agree with the theories about individual behavior, such as presented in chapter 3, which state that motivation, abilities and reinforcing experiences are the factors which predict people's behavior. We also studied patients' drug questions as an indicator of technicians' communicative behavior at the counter and again other factors than technicians' personal variables explained the variance among technicians in the number of drug questions they received. We found that the number of Over-The-Counter contacts was the most important factor which explained differences among technicians with respect to the number of drug questions they received. These results demonstrate that differences among technicians as to the frequency of verbal drug information given to patients and differences as to the number of drug questions they received, are not related to their personal characteristics, but to differences in their patient samples.

These results emphasize the necessity to use a homogeneous sample of patient contacts, when studying the determinants of technicians' patient education behavior. For this reason we also looked at the number of drug questions technicians received in prescription drug contacts, which was found to be related with some personal variables. Patients asked more frequently drug questions in their contacts with technicians who demonstrated higher outcome expectancies of patient education and had attended more frequently patient education courses. These results were also found in studies about pharmacists' behavior, which were reviewed in chapter 2. These studies demonstrate a relationship between pharmacists' (evaluated) beliefs about patient education and their behavior. Green's theory about behavioral change (discussed in chapter 3) also mentions the importance of predisposing factors like one's beliefs and outcome expectancies and enabling factors like education, which all are known to predict people's behavior. However, this theory also mentions other enabling factors and reinforcing

factors, which contribute to the development and sustainment of new behavior. These aspects of Green's concept have not been found by our results. The demonstrated disagreement with Green's statement about a relationship between behavior and enabling and reinforcing factors, may be due to different factors.

Our first comment concerns the observed patient education behavior, such as demonstrated in the audiotapes. This behavior may be viewed as rather standardized, as the verbal drug information mainly concerns the repeating of drug label instructions. We expect this kind of behavior does not require technicians' personal involvement, which may have influenced the results of our study about the determinants of technicians' patient education behavior. Apparently, the current patient education in community pharmacies has not reached a level which allows the performance of studies about the determinants of technicians' patient education behavior.

Secondly, we should realize our data concern only those technicians who agreed to being audiotaped. One may expect these technicians to experience fewer problems and negative experiences with practicing patient education compared to their colleagues who did not agree to being audiotaped. This limits the opportunity to study technicians' perceived inabilities and negative experiences in relationship with their patient education behavior. Possibly these aspects are related with technicians' patient education behavior but our data could not answer this question, as the informed consent procedure offered technicians the opportunity to refuse being audiotaped.

### **Theories about organizational change**

We found that the intervention program influenced the frequency and contents of the verbal drug information given with prescription drugs. This effect has been demonstrated in the pharmacy teams, whose technicians and pharmacists participated in all activities of the intervention program. No effects were found in the teams that attended the organized activities (pharmacists' meetings, communication courses) less frequently. Apparently both technicians and pharmacists have to attend these meetings and courses, in order to increase their patient education activities. The pharmacy teams that participated less frequently in the intervention program had not increased their patient education activities. Probably these pharmacy teams did not pass through the adoption stage of accepting the innovation, at the moment the project started. As the experiment of the interventions lasted for a period of one year, this may have been too short to realize the necessary motivation and expertise to increase patient education activities in the pharmacy. When we started the project, we expected the pharmacy teams to have passed through the first stage of accepting the innovation. However, frequently technicians reported to be satisfied with the current level of patient education and showed not to be convinced of the necessity to change their patient education behavior. It seems these pharmacy teams need a longer period for changing their patient education behavior at the counter, than a period of one year. These findings are in agreement with theories about innovating organizations, which mention periods of several years and longer periods in the case of implementing innovations which require another culture in the organization and do not produce positive effects which are observable. So the

implementation of patient education in community pharmacies may require several years, what may explain the limited effects of our intervention program.

Our results concern the so-called innovators among the population of pharmacists, which showed to be highly motivated to work on patient education and to adopt new activities in their organization. Their experiences with patient education will have to be communicated to other pharmacists, who may use this information for getting involved in new patient education activities. Finally, we should realize that not all pharmacists will be convinced of the necessity of practicing patient education in community pharmacies. The less motivated pharmacists are expected to become involved when the majority of their colleagues practice patient education, which leads to the social pressure needed to implement the innovation among the so-called laggards in Roger's diffusion curve.

### **Further research questions**

As we used audiotaped patient contacts, we concentrated on the verbal part of the communication process, while no attention could be given to the nonverbal communicative behavior of both the patients and the professionals. Videotapes may be used to study the nonverbal behavior, which may reveal more about the quality of the communication process. The verbal part of the communication process revealed that patients were seldom invited to ask drug questions or to give feedback on the information given to them, but technicians' nonverbal behavior may be of more importance in this view. Videotapes may also yield information about patients' nonverbal behavior, which may express their acceptance and understanding of the information given to them.

In addition, experiments may be needed with regard to technicians' and pharmacists' nonverbal and verbal behavior on the one hand, and the circumstances at the counter regarding patients' privacy on the other hand, to find out how to encourage patients to participate in the communication process about drugs. These experiments may be followed by studies about the effects of a more two-sided communication process on patients' drug use and patients' satisfaction with the prescribed drug therapy and pharmacy services.

A related question concerns the instruments that are to be used to answer patients' individual needs for drug information. Consumer surveys may reveal patients' views about the pharmacist's role in providing them with the support they need to use their drugs properly. Special attention is needed for specific groups such as the non-native speakers (immigrants), the elderly, the children and visitors who are not able to visit the pharmacy themselves. Possibly other instruments than a personal contact at the counter are needed to provide these categories of persons with the necessary drug information and support.

Additional research is needed into the determinants of technicians' patient education behavior at the counter, with more homogeneous patient samples. Another research question concerns the effectiveness of interventions addressed to technicians' outcome expectancies and the specific interventions

addressed to the technicians who disagreed with being audiotaped. What kind of educational or organizational support do these technicians need in order to feel comfortable in their contacts with patients? Similarly, evaluations are needed of courses about patient education in order to find out what strategy is most effective to improve technicians' and pharmacists' communicative behavior. In addition, education directed to pharmacists' management skills has to be implemented in pharmacy schools and evaluated as to the effects on the pharmacist's performance in the pharmacy.

Finally, the results of our study demonstrate that patient education in the community pharmacy rather concerns patient instruction, thereby limiting the influence on patients' drug use. Our results stress the importance of increased attention on developing patient education in community pharmacies. Efforts to develop patient instruction into patient education have to be evaluated as to the effects on a patient level. These results may be useful to convince pharmacists and technicians of the benefits of a two-sided communication process with patients, thereby starting a process of changing patient instruction into patient education. This innovation process may be a challenge to the community pharmacy practise the next decade.

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## APPENDICES

### Appendix I. OBSERVATION FORM PHARMACY PATIENT CONTACTS

#### A. Patient contacts

##### Contact identity

No. pharmacy.....  
 No. observer.....  
 No. tape.....  
 No. contact.....

##### Patient

Gender  
 0 male  
 0 female  
 0 child  
 0 unknown

Identity  
 0 drug user  
 0 non drug user  
 0 unknown

Language  
 0 Dutch native speaker  
 0 non Dutch native speaker  
 0 unknown

Encounter  
 0 OTC contact  
 0 prescription offering  
 0 prescription drug delivery  
 0 non drug related  
 0 unknown

##### Verbal Information

Verbal encouragement of patient's questioning

0 yes  
 0 no  
 0 unknown

Verbal drug information given to patient

0 yes → **classify information contact**  
 0 no  
 0 unknown

#### B. Information contacts

##### Classify

0 dosage  
 0 time  
 0 application  
 0 activity  
 0 drug advice  
 0 meals  
 0 storage  
 0 adverse effects  
 0 drug interaction  
 0 contra indication  
 0 other information

##### Patient's question?

yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no

##### Motivating?

yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no

##### Feedback control?

yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no  
 yes/no

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Appendix II. QUESTIONNAIRE PHARMACY TECHNICIANS

Identity: Pharmacy nr

Date:

**1. Education and continuing education.**

a. Did you receive lessons about drug information at school? 0 yes 0 no

b. Did you receive lessons in patient communication at school? 0 yes 0 no

c. Did you attend drug information courses after school? 0 yes 0 no

d. Which and how many of the courses listed below did you attend?

		number of courses
0	Courses at technicians' school	.....
0	Courses of pharmaceutical companies	.....
0	Staff meetings in your pharmacy about drug information	.....
0	Courses provided by other organizations	.....

e. Did you attend patient communication courses after school? 0 yes 0 no

f. Which and how many of the courses listed below did you attend?

		number of courses
0	Courses at technicians' school	.....
0	Courses of pharmaceutical companies	.....
0	Staff meetings in your pharmacy about drug information	.....
0	Courses provided by other organizations	.....

**3. Patient education in the pharmacy**

Now we list a number of statements about patient education.  
Would you please be so kind to indicate your opinion?

	(1) Strongly disagree		Strongly agree (5)		
<b>Patient education.....</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Belongs to my professional responsibility	0	0	0	0	0
Is as important as other pharmacy activities	0	0	0	0	0
Contributes to improved patient contacts	0	0	0	0	0
Expands my professional activities	0	0	0	0	0
Benefits proper drug use	0	0	0	0	0
Benefits patient's autonomy	0	0	0	0	0
Requires more drug knowledge than I possess	0	0	0	0	0
Requires more communicative skills than I possess	0	0	0	0	0
Requires more privacy conditions in our pharmacy	0	0	0	0	0
Is more difficult to me when other patients listen	0	0	0	0	0
Is more difficult to me when my colleagues listen	0	0	0	0	0
Is more difficult to me when the pharmacist listens	0	0	0	0	0
Requires more detailed instructions from the pharmacist	0	0	0	0	0
Requires more technicians in our pharmacy	0	0	0	0	0
Has given me positive reactions from doctors	0	0	0	0	0
Has given me positive reactions from the pharmacist	0	0	0	0	0
Has given me positive reactions from my colleagues	0	0	0	0	0
Has improved the cooperation in the pharmacy	0	0	0	0	0

**4. Audiotaped patient contacts in your pharmacy**

a. Did you participate in the audiotapes which were made the last month? 0 yes    0 no

b. How did you experience the audiotaped recording? .....

Appendix III. SAMPLE OF PATIENTS

Patient variables in observed pharmacy patient contacts about drugs\*

Variable	Category	Pretest	Posttest	Whole sample
		(n=6784)	(n=5496)	(n=12280)
		%	%	%
Encounter	prescription offering	30.5	30.2	30.3
	prescription drug delivery	54.2	57.7	55.7
	OTC	11.4	10.5	11.0
	missing	4.2	1.6	3.0
	in total	100.0	100.0	100.0
Identity	drug user	30.9	26.1	28.8
	non drug user	14.3	13.7	14.0
	missing	54.8	60.2	57.2
	in total	100.0	100.0	100.0
Language	Dutch	96.0	96.9	96.4
	non Dutch	1.8	1.1	1.4
	missing	2.3	2.0	2.2
	in total	100.0	100.0	100.0
Gender	female	60.1	59.5	59.8
	male	34.7	36.3	35.4
	child	1.0	0.7	0.8
	missing	4.2	3.5	3.9
	in total	100.0	100.0	100.0

\* not drug related contacts excluded

Appendix IV. TECHNCIANS' OPNINIONS ABOUT PATIENT EDUCATION

Technicians' answers on patient education statements\*

Patient education.....	Pretest**		Posttest***	
	Av	Sd	Av	Sd
1 belongs to my professional responsibility	4.2	0.8	4.2	0.7
2 is as important as other pharmacy activities	4.3	0.8	3.5	1.0
3 contributes to improved patient contacts	4.2	0.8	3.8	1.0
4 expands my professional activities	4.4	0.9	4.1	0.7
5 benefits proper drug use	4.5	0.7	4.2	0.8
6 benefits patient's autonomy	4.1	0.8	3.9	0.8
7 requires more drug knowledge than I possess	3.6	1.1	3.4	1.0
8 requires more communicative skills than I possess	3.5	1.1	4.1	0.8
9 requires more privacy conditions in our pharmacy	3.2	1.2	4.1	0.9
10 is more difficult to me when other patients listen	3.3	1.2	2.9	1.0
11 is more difficult to me when my colleagues listen	2.4	1.2	3.1	1.3
12 is more difficult to me when my pharmacist listens	2.9	1.2	3.7	1.1
13 requires more clear instructions from the pharmacist		#	2.1	0.9
14 has given me positive reactions from doctors		#	4.0	0.8
15 has given me positive reactions from my pharmacist		#	2.8	1.0
16 has given me positive reactions from my colleagues		#	2.9	1.0
17 has improved the cooperation in the pharmacy		#	2.7	1.1

\* (1=strongly disagree; 5=strongly agree)

\*\* n=119-121; \*\*\* n=120-125 (different numbers are due to missing values)

- items were not included



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## **DEVELOPING PATIENT EDUCATION IN COMMUNITY PHARMACY**

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This thesis deals with the development of patient education in the community pharmacy. The research questions concentrate on the determinants of technicians' patient education behavior and the effects of a one-year lasting intervention program on the patient education activities in the pharmacy. This summary reports about the research methodology and the results.

### **Research methodology**

The studied patient education behavior concerned the provision of verbal drug information to pharmacy visitors. Audiotapes of patient contacts were made and the studied patient education behavior concerned the verbal drug information given to patients at the counter. The determinants of technicians' patient education behavior have been studied by analyzing their patient education behavior in relationship with their personal variables and their pharmacy variables. A survey was used to collect information about technicians' views on patient education, subdivided into three categories: their outcome expectancies of patient education, their abilities to practice patient education (including their educational level) and their experiences with this behavior. Information about their pharmacy was collected in a survey addressed to the pharmacist, which included questions about the pharmacist's views on patient education on the one hand and questions about the staff meetings in the pharmacy on the other hand. Multiple regression analysis has been used to determine the variables which explain the differences in technicians' patient education behavior at the counter.

The effects of an intervention program on the patient education activities in the pharmacies were studied with a quasi-experimental design, including an experimental and control group of community pharmacies. Audiotapes were made before and after the intervention program was submitted to the experimental group. The main objective of the intervention program was to increase pharmacists' expertise in supervising patient education activities in their pharmacies. The program lasted for a period of 1 year and consisted of pharmacists' meetings about supervising the development of patient education, staff meetings in the pharmacy and communication courses.

## **Results**

Audiotapes were made in 20 community pharmacies totalling 200 hours in the pretest, which concerned 6784 patient contacts about drugs. In 24% of these drug contacts, patients were given verbal drug information, in addition to the written drug information they received by means of drug labels and patient package inserts. Large differences were found in the distinguished encounters, as patients were seldom given verbal information when they offered a prescription (2% of these contacts), whereas in the case of prescription drug deliveries and OTCs patients more frequently received verbal drug information (respectively 36% and 30% of these contacts).

### **Determinants of patient education behavior**

We analyzed the patient education behavior of 50 technicians and found that the frequency of verbal drug information given to patients was predicted by the number of drug questions technicians received. When analyzing the numbers of drug questions technicians received, we found that the percentage of OTC contacts in their patient samples predicted to what extent they received drug questions. The analysis of technicians' prescription drug delivery contacts only, revealed that patients more frequently asked drug questions in the contacts with those technicians who had attended more patient education courses. In comparison with their colleagues, these technicians also demonstrated higher levels of role beliefs and positive outcome expectancies of patient education (proper drug use) and demonstrated lower levels of other outcome expectancies of patient education. These expectancies concerned the influence of patient education on an increased patient autonomy, reduced barriers for patients to ask their drug questions and increased customer registration in the pharmacy. Possibly technicians fear these effects of patient education, which may influence their communicative behavior, thereby decreasing the number of drug questions they receive at the counter.

### **Effects of the intervention program**

We analyzed the variance of the patient education activities in the pharmacies - such as observed in the audiotapes collected in the posttest- thereby correcting for their pretest scores and the differences in their patient samples (percentage of Over-The-Counter contacts, percentage of drug questions, percentage of female patients). As the community pharmacies differed in the extent to which they participated in the intervention program, a separate analysis was carried out with the results of the 3 experimental pharmacies whose technicians and pharmacists participated in all activities organized. These analyses demonstrated a significant effect of the intervention program on the frequency of the verbal drug information given with prescription drug delivery contacts, in only those pharmacies whose technicians participated in activities organized.

## *Conclusions*

1. Patient education in community pharmacies mainly concerns a one-way communication process, in which technicians tell patients how to use their drugs. In this respect we should rather talk about patient instruction than about patient education.
2. Patients - who asked few drug questions themselves- were seldom invited verbally to ask drug questions or to give feedback on the information given. Patients asked most frequently drug questions in OTC contacts.
3. Patients' informational needs may not be satisfied by the verbal drug information given in community pharmacies, which is limited to the repeating of logical drug label instructions whereas patients' interests may concern other drug aspects.
4. Patients' behavior in asking drug questions is the most important factor to explain differences in the verbal drug information technicians provide to patients at the counter.
5. Patients asked more drug questions while communicating with technicians who had attended patient education courses more frequently, while these technicians also reported higher outcome expectancies of patient education and role beliefs.
6. A one-year lasting intervention program, consisting of pharmacists' meetings, staff meetings and communication courses was found to be effective in increasing the verbal drug information given to patients in community pharmacies.

## **SAMENVATTING**

Dit proefschrift gaat over het ontwikkelen van patiëntenvoorlichting in de openbare apotheek. Twee onderzoeksvragen worden behandeld. De eerste vraag gaat over de determinanten van voorlichtingsgedrag van apothekersassistenten. Een tweede onderzoeksvraag heeft betrekking op een interventieprogramma, bestaande uit cursussen en begeleiding van apothekers en assistenten. We hebben onderzocht of dit programma heeft geleid tot een toename van de voorlichting aan de patiënt, zoals uitgedrukt in de mondelinge voorlichting over geneesmiddelen in de apotheek. In de eerste hoofdstukken wordt het thema van dit proefschrift geïntroduceerd (hoofdstuk 1), een overzicht gegeven van de literatuur inzake patiëntenvoorlichting over geneesmiddelen (hoofdstuk 2) en de theorieën besproken, waarop het interventieprogramma is gebaseerd (hoofdstuk 3). Vervolgens wordt de studie-opzet en de inhoud van het interventie-programma beschreven in hoofdstuk 4. De resultaten van dit onderzoek worden beschreven in hoofdstuk 5, terwijl op de betekenis hiervan wordt ingegaan in hoofdstuk 6. Een korte beschrijving wordt gegeven van de inhoud van ieder hoofdstuk.

### **Hoofdstuk 1. De introductie**

De achtergronden van patiëntenvoorlichting in de Nederlandse openbare apotheek worden beschreven. De noodzaak van patiëntenvoorlichting over geneesmiddelen wordt besproken, vanuit een juridische invalshoek, vanuit de informatiebehoefte van de patiënt en vanuit de problematiek rond noncompliance (het gebruik van een geneesmiddel op een andere manier dan deskundigen adviseren). Pas sedert 1975 mogen apotheken bijsluiters geven aan de patiënt, aldus de Wet Op de Geneesmiddelenvoorziening (WOG). Per 1 januari 1993 dient bij ieder fabrieksgeneesmiddel een bijsluiter te worden meegegeven aan de patiënt, aldus de WOG. De Wet op de Geneeskundige Behandelings Overeenkomst (WGBO) heeft geen rol toebedacht aan de openbare apotheek en verwijst patiënten voor hun recht op informatie over een voorgeschreven geneesmiddel (en het hieraan verbonden instemmingsrecht) naar de arts. Een heel andere juridische invalshoek betreft de produktaansprakelijkheid, zoals geformuleerd in het Nieuw Burgerlijk Wetboek (NBW). Gezien de aansprakelijkheid voor de door hen geleverde geneesmiddelen doen apothekers er verstandig aan altijd een bijsluiter te geven bij geneesmiddelen (ook bij de zelfgemaakte produkten), welke volledige informatie over het geneesmiddel en duidelijke gebruiksinstructies vermeldt. Apothekers kunnen namelijk aansprakelijk worden gesteld voor de schade ten gevolge van geneesmiddelgebruik, welke voorkomen had kunnen worden indien de patiënt goed geïnformeerd was.

Apothekers krijgen vanuit hun beroepsorganisatie (Koninklijke Nederlandse Maatschappij ter bevordering van de Pharmacie) ondersteuning in hun voorlichtingstaak door middel van voorlichtingsmateriaal, een publiekscampagne en standaarden/kwaliteitsnormen voor patiëntenvoorlichting. Ook voorziet de KNMP in een gratis telefoonlijn waar het publiek anoniem haar geneesmiddelvragen kan stellen en tegelijkertijd gestimuleerd wordt zoveel

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mogelijk de eigen apotheek als informatiebron te raadplegen. In de opleiding voor apothekers wordt sinds ruim 10 jaar aandacht besteed aan patiëntenvoorlichting, terwijl op de scholen welke apothekersassistenten opleiden dit soms nog een te ontwikkelen vak is. Patiënten voorlichten over hun geneesmiddelen is voor apothekers en apothekersassistenten een relatief nieuwe taak.

## **Hoofdstuk 2. Patiëntenvoorlichting over geneesmiddelen**

Een inventarisatie wordt gegeven van studies over geneesmiddelvoorlichting aan patiënten. Allereerst komt de voorlichting in apotheken ter sprake in paragraaf 2.2, waarbij blijkt dat schriftelijke informatie (bijsluiter, etikettekst) vaker wordt meegegeven dan mondelinge informatie. Als er mondelinge informatie wordt gegeven in een apotheek dan betreft het vooral instructies over het gebruik, hetgeen ook de informatie is die door artsen wordt gegeven aldus de besproken studies in paragraaf 2.3. Veel minder vaak worden de werking en bijwerkingen van geneesmiddelen besproken met de patiënt, terwijl consumenten hierover vaak vragen stellen aan de Geneesmiddel-Infolijn (een gratis 06-nummer), aldus de in paragraaf 2.4 besproken studies. Patiënten stellen weinig geneesmiddelvragen in de apotheek en als zij om informatie vragen dan blijkt dit vooral over het gebruik te gaan. Op basis van deze tegenstelling in de vragen die de Geneesmiddel-Infolijn ontvangt en de vragen die apotheken ontvangen, wordt geconcludeerd dat de informatiebehoefte rond geneesmiddelen slechts voor een deel aan de balie in de apotheek wordt kenbaar gemaakt.

Paragraaf 2.5 gaat in op de effecten van voorlichting op het geneesmiddelgebruik. Een combinatie van schriftelijke en mondelinge voorlichting biedt de beste garanties voor verantwoord geneesmiddelgebruik, vooral als deze voorlichting is afgestemd op de individuele informatiebehoefte van de patiënt en gebruik wordt gemaakt van feedback en herhaling. Een vervolgvraag is hoe deze individuele benadering van patiënten in apotheken kan worden bereikt? Paragraaf 2.6 laat zien dat het voorlichtingsgedrag van apothekers vooral is bestudeerd in samenhang met hun opvattingen over patiëntenvoorlichting en hiermee een samenhang vertonen. Daarnaast blijken communicatieve vaardigheden als belangrijk te worden ervaren door apothekers. Het ontwikkelen van deze attitude en vaardigheden kan door onderwijs waarin gebruik wordt gemaakt van principes als rolmodeling, feedback, video-training en aandacht voor concrete vaardigheden. Als vervolgens het geleerde direct in de praktijk kan worden toegepast en wordt ondersteund door professionele standaarden, is de kans het grootst op handhaving van het nieuw aangeleerde voorlichtingsgedrag.

## **Hoofdstuk 3. Het ontwikkelen van patiëntenvoorlichting**

Theorieën op het gebied van gedragsverandering en veranderingen in organisaties zijn gebruikt ter bepaling van de inhoud van ons interventieprogramma voor het ontwikkelen van patiëntenvoorlichting in apotheken. Op basis van Green's PROCEED/PRECEDE model en

Ajzen's gedragsmodel is geconstateerd dat de determinanten van voorlichtingsgedrag kunnen worden onderscheiden in drie groepen, namelijk de motivatie, de mogelijkheden en de ervaringen met voorlichtingsgedrag. Bij het ontwikkelen van patiëntenvoorlichting moet rekening worden gehouden met deze individuele factoren. Daarnaast is het ontwikkelen van voorlichting in apotheken gezien vanuit theorieën over vernieuwingen in organisaties. Belangrijk hierbij is de studie van Rogers, omtrent het invoeren van vernieuwingen in relatie met de kenmerken van deze organisaties. Op grond van deze studie wordt gesteld dat de introductie van patiëntenvoorlichting in apotheken intensieve aandacht vereist in het beginfase, waarin de acceptatie plaatsvindt van deze vernieuwing. Patiëntenvoorlichting is een taak welke directe raakvlakken heeft met de opvattingen over professionele verantwoordelijkheid en de autonomie van de geneesmiddelgebruiker, hetgeen betekent dat een normatieve-educatieve benadering wordt verkozen als strategie om patiëntenvoorlichting te ontwikkelen.

#### **Hoofdstuk 4. Onderzoeksopzet**

Onderzocht is de mondelinge geneesmiddel-informatie die in de apotheek aan de balie wordt gegeven aan apotheekbezoekers. Audiotapes zijn gemaakt van de baliecontacten met patiënten in 20 apotheken, welke gegevens werden verzameld zowel voor als nadat het interventie-programma werd aangeboden. Op deze wijze werden per apotheek 2 x 10 uur geluidsopnamen verzameld. Het betreft apotheken waarvan de apothekers postacademisch onderwijs hadden gevolgd over patiëntenvoorlichting en tegelijkertijd aangaven ondersteuning te willen hebben bij het verder ontwikkelen van voorlichting. De determinanten van het voorlichtingsgedrag zijn onderzocht door de geluidsbanden te analyseren op individuele bijdragen van apothekersassistenten en deze gegevens over hun gedrag te relateren aan een door henzelf ingevulde vragenlijst. De hierin opgenomen vragen zijn opgesteld op basis van de theorieën over gedragsverandering, waarin de factoren motivatie, (on)mogelijkheden en ervaringen met nieuw gedrag centraal staan.

Het effect van het interventie-programma is bestudeerd door de omvang en kwaliteit van de voorlichting in apotheken te bestuderen zowel voor als na de interventie-periode. Van de 20 apotheken namen er 9 deel aan het ontwikkelde interventieprogramma (de experimentele groep), terwijl de overige 11 apotheken als controle groep optraden. Het interventie-programma bestond uit een gestructureerd werkoverleg over patiëntenvoorlichting, in totaal 4 communicatie-trainingen en 4 bijeenkomsten voor de apothekers waarin de voortgang van in gang gezette nieuwe activiteiten werd gestimuleerd en begeleid. Het effect van dit interventie-programma is bestudeerd door de mondelinge voorlichting in alle apotheken (experimentele groep en controle groep) te analyseren op de samenhang met deelname aan het interventie-programma. Onderscheid werd gemaakt naar de mate waarin apotheken volledig danwel gedeeltelijk deelnamen aan dit programma. De scores van de apotheken werden gecorrigeerd voor verschillen in de aard van de baliecontacten (recept-aannemen, receptgeneesmiddel afleveren, zelfmedicatie verkoop).

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## Hoofdstuk 5. Resultaten

Apotheken verschillen nogal in de mate waarin mondelinge informatie wordt gegeven over geneesmiddelen aan apotheekbezoekers, terwijl de aard van het contact eveneens een rol speelt (zelfmedicatie, recept aanbieden, receptgeneesmiddel afleveren). In 36.0% van de contacten waarin een receptgeneesmiddel werd afgeleverd werd mondelinge informatie gegeven, variërende van 12-62% per apotheek. Bij de zelfmedicatie contacten vonden werd gemiddeld in 29.6% mondelinge informatie gegeven, terwijl de apotheekscores varieerden van 8-67% van deze contacten. Als een recept wordt aangeboden, wordt zelden mondelinge informatie gegeven over geneesmiddelen (1.6% van deze contacten).

De kwaliteit van de mondelinge informatie is beoordeeld door enerzijds te letten op het communicatie-proces en anderzijds op de aard van de informatie. Wat betreft de participatie van de patiënt in het communicatie-proces constateerden we dat patiënten zelden verbaal werden uitgenodigd tot het stellen van vragen of het geven van feedback op de verstrekte informatie. Ook is bestudeerd of patiënten vragen stelden, als zijnde een indicatie is voor de mate waarin patiënten participeren in het communicatie-proces. In 5% van alle contacten over geneesmiddelen stelden patiënten een vraag, hetgeen overigens ook per apotheek nogal verschilde (1-20% van de geneesmiddelcontacten). Overigens werden bij zelfmedicatie veel vaker vragen gesteld (20% van deze contacten), dan bij receptgeneesmiddelen (5%), terwijl bij het aanbieden van een recept zelden een vraag werd gesteld.

De mondelinge informatie die wordt gegeven betreft vooral gebruiksinstructies, welke overigens slechts in beperkte mate worden voorzien van motiverende achtergrond-informatie.



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Customer satisfaction abut pharmacy services*
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