

## Evaluation of patient opinions in a pharmacy-level intervention study

M. C. M. Pronk, A. Th. G. Blom, R. Jonkers and A. Bakker

### Abstract

**Objective** To explore patients' satisfaction with their community pharmacy's services and to evaluate the effects of an intervention programme in which a trained technician organised patient education activities in the pharmacy.

**Method** We surveyed patients visiting the participating pharmacies at three stages: at the start of the intervention period (0 months, T0), at the end (after 12 months, T1), and 12 months after the intervention had been completed (24 months from baseline, T2). At each stage, 500 questionnaires were distributed by each pharmacy.

**Setting** 28 Dutch community pharmacies: 14 intervention and 14 controls.

**Key findings** The response rates were 54%, 44% and 43% at T0, T1 and T2, respectively. Baseline data showed that patients reported satisfaction with helpfulness, waiting time, ease of asking questions, answers to questions, and patient leaflets provided. Around two thirds (59.5%) of the patients said they would ask a pharmacy employee questions if they were concerned about side effects of their medication. Asking questions was not reported to be difficult for most patients (88.9%). The reasons most often given for experiencing difficulties with asking questions were related to lack of privacy (16.9% of all patients), waiting time of other patients (8.8%) and busy pharmacy employees (6.7%). The most frequently reported reason for being less satisfied with the answers to questions was receiving too little information (7.5%). Our analyses showed a significant improvement only on the outcome variable "helpfulness" experienced by patients between 0 (T0) and 12 months (T1), and this was found to be sustained one year later (T2).

**Conclusion** The overall findings on patient satisfaction showed that almost two-thirds of the respondents saw the pharmacy as a source of information about medication. Community pharmacies clearly have an important role in providing such information. Lack of privacy was the most common reason for patients reporting difficulties in asking questions about medicines and this needs pharmacists' attention. Our analysis showed that the intervention had an effect on "helpfulness" experienced by patients, which slightly increased in the intervention period (T0–T1 differences) and appeared to have remained at the higher level one year later (T2).

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### Introduction

Community pharmacies are increasingly making their activities more patient-focused. However, previous research indicated that the quality and implementation of patient oriented activities in the Netherlands was not sufficient.<sup>1–3</sup> Patient satisfaction research, or research on the opinions of patients, is useful because the results are an indication of the quality of pharmaceutical care<sup>4</sup> and can be used as a tool for adjusting the policy of the pharmacy.<sup>5</sup> Several studies have suggested that patient satisfaction is related to choice of pharmacy<sup>6–9</sup> but also that it takes a number of poor experiences before customers become dissatisfied and switch providers.<sup>9,10</sup> In addition, research has shown that more satisfied patients are more likely to adhere to their medical regimens.<sup>11,12</sup>

An intervention was developed to increase the implementation of patient education activities through structured working in the pharmacy. The intervention consisted of education for one technician and one pharmacist per pharmacy, over a period of one year. The course provided the necessary knowledge, tools and skills to plan and

carry out patient education activities, based on a stepwise model.<sup>13</sup> An outline of the intervention is shown in Figure 1. This paper reports the findings from the part of the study in which patients' opinions were sought.

Patients' opinions about the services of their pharmacy were studied in order to evaluate the effects of the intervention programme. The aims were to investigate satisfaction with community pharmacy services, to investigate whether the intervention resulted in any changes in patients' satisfaction ratings of their pharmacy, and to compare intervention and control pharmacies.

## Methods

### Participating pharmacies

A sample of Dutch pharmacies that were developing patient education activities but had reported experiencing difficulties with the implementation process was invited to participate in the research. The selection criteria for participating in the intervention programme and the study were based on theory and on preliminary research.<sup>2,14</sup> The size of the sample was limited by the number of pharmacies that could be entered into the education

course, which was 14. Thus, 28 pharmacies were included, matched in pairs and randomly assigned to either the intervention or the control group. The matching criteria were based on conditions that might influence the effect of the intervention, including the nature of the problems with regard to patient education (no patient education at busy times, lack of clear agreements on patient education, lack of continuity of activities, difficulties with applying knowledge and skills learned in courses), experiences with delegation of tasks from pharmacist to technicians (delegation of patient education tasks, delegation of other tasks, no delegation of tasks), the size of the pharmacy, and the type of computer system used in prescription handling. Each intervention pharmacy nominated one technician and one pharmacist. Over a period of one year the technician attended eight educational sessions and the pharmacist attended four.

### Study population and design

To assess the short- and long-term effects of the intervention on patient satisfaction, a pre/post-test design with an intervention and control group was used. This enabled correction for baseline differences between pharmacies and "natural developments" (events other than the inter-

**Figure 1** Intervention programme and defined tasks of the technician and the pharmacist.

The intervention programme consisted of eight course meetings for technicians and four course meetings for pharmacists, spread over one year. One technician and one pharmacist from each pharmacy took part. Based on theory, literature, and field study, tasks were defined for the technician with the aim of increasing and promoting structured working in the pharmacy. In addition, tasks for the pharmacist were defined, because he/she had to guide, support and coach the activities of the technician. The tasks were learnt and applied step-by-step in the pharmacies, starting with an assessment of the current situation. The next steps were making plans for change, the implementation of these plans and the evaluation and anchoring of the new activities. The intervention programme was carried out by a specialised organisation (Netherlands Institute for Health Promotion and Disease Prevention, NIGZ). The attendance rates at course meetings were observed by the researchers. Pharmacists' and technicians' experiences in the pharmacies were explored in interviews. Finally, the technicians' diaries were analysed to assess the reported activities/hours spent on organising patient education activities in their pharmacies.

#### Tasks of technician

- Observe bottlenecks and needs of technicians and patients with regard to patient education
- Take initiative to solve the problems with regard to practising patient education
- Evaluate whether the chosen solutions work
- Observe educational needs of colleagues and communicate them to the pharmacist
- Oversee a patient leaflet management system\*
- Be the person to talk to with regard to patient education for colleagues
- Be the person to talk to with regard to patient education for the pharmacist

#### Tasks of pharmacist

- Provide guidance on the work process regarding improvement of the quality of patient education and communication in the pharmacy
- Delegate tasks to the technician
- Develop a policy to change the work process around patient education in the pharmacy

\*A leaflet management system includes all the organisational activities with regard to leaflets: the decisions and agreements about which leaflets are used, when and where (at the counter, in a leaflet holder), the logistics (availability of leaflets), etc.

vention affecting the outcome) in pharmacy practice or patient opinions.

Patients' opinions of the services provided by their pharmacy were explored using cross-sectional surveys in each of the 28 pharmacies enrolled in the study. Every pharmacy in the study received 500 questionnaires at T0 (February 1999) and T1 (February 2000). At T2 (February 2001) only the intervention group was assessed, because the control group had, in the meantime, received the intervention between T1 and T2. The pharmacy technicians and pharmacists gave the questionnaire to their patients, who completed it at home and returned it to the university anonymously without postal charges.

Data were kept on the number of questionnaires distributed, the distribution intervals and the reported representativeness (in the opinion of pharmacists and technicians) of the sample of patients that received a

questionnaire. The subsequent measurements (T0–T1–T2) represented separate samples of respondents.

### Questionnaire

A short questionnaire was developed to explore patients' opinions about the services provided by their pharmacy. It contained questions on pharmacy services, on any reasons for having difficulties with asking questions, who the patient preferred to ask about drug side effects and reasons for being less satisfied with responses to questions. Further questions concerned patient background characteristics (sex, year of birth, educational level, visits to this pharmacy, and the number of OTC and prescription medicines used). Panel 1 shows an overview of the questions. Multiple responses were possible for questions 5, 6 and 8.

**Panel 1** Overview of questions in the patient questionnaire (question scores shown in brackets).

#### Satisfaction-items

- 1 What do you think of the waiting time in this pharmacy?  
*A problem for me: Often Regularly Sometimes Seldom Never (1–5)*
- 2 How helpful are the pharmacy technicians?  
*Very willing- Willing- Not very willing- Not willing-to help (4–1)*
- 3 How friendly is the service?  
*Very friendly Friendly Less friendly Not friendly (4–1)*
- 4 How easy is it for you to ask questions about medication in this pharmacy?  
*Very easy Easy Sometimes easy, sometimes difficult Difficult Very difficult (5–1)*
- 5 What can make asking questions in this pharmacy difficult for you?  
*The employees are very busy  
The employees do not have enough knowledge about medicines  
The employees do not like questions  
The employees are not helpful  
Other patients have to wait longer if I ask something  
Other patients can hear what we are talking about*
- 6 If you were worried about the side effects of a medicine, who would you talk to?  
*The GP The pharmacy employee Family Friend Somebody else Nobody*
- 7 How satisfied are you with the answers to your questions about medicines in this pharmacy?  
*Very satisfied Satisfied Not satisfied, not dissatisfied Dissatisfied Very dissatisfied (5–1)*
- 8 If you are less satisfied with the answers to your questions, what are the reasons?  
*I receive too little information  
I get incorrect information  
The information worries me  
I do not understand the information*
- 9 How satisfied are you with the patient information leaflets that you can get at this pharmacy?  
*Very satisfied Satisfied Not satisfied, not dissatisfied Dissatisfied Very dissatisfied (5–1)*

#### Background characteristics

- 10 Sex
- 11 Year of birth
- 12 Educational level
- 13 Number of visits to this pharmacy in the last 12 months
- 14 Number of years being a client of this pharmacy
- 15 Number of prescription medicines used this week
- 16 Number of OTC medicines used this week

### Data analysis

The data were analysed using SPSS, version 10.0. The correlation between the background variables and the outcome measures was evaluated with Spearman's correlation coefficient for non-parametric data. Two questions related specifically to the way patients were treated in the pharmacy (questions 2 and 3). The reliability of these two items combined was assessed. Cronbach's alpha is the most frequently used measure of the reliability of a test. It tests the homogeneity of items in a questionnaire that are intended to measure the same construct. In validated questionnaires, a Cronbach's alpha of at least 0.80 is generally considered to be acceptable. However, as this was an exploratory study, a Cronbach's alpha of 0.65 was taken as the minimum reliability value. To enable more sophisticated analyses than those possible with ordinal variables, the 2-to-8 scale that resulted from this procedure ("Helpfulness") was treated as an interval variable. Descriptive analyses were applied to explore patients' opinions at baseline. Stepwise regression analyses were carried out with the "helpfulness" as dependent variable and the background variables as factors to explore to what extent the background variables were predictors of the outcomes.

To assess any effect of the intervention on patients, the independent samples t-test was used to compare interval level outcome variables (tests between T0-T1 and T1-T2), and the Mann-Whitney test was used to do the same comparisons for ordinal-level outcome measures. Independent samples tests were applied because the samples of T0, T1 and T2 were different samples. Mann-Whitney comparisons were used because the two comparisons are intended to answer different questions: (1) Is there a short-term effect on patient opinions? and (2) Is the effect sustained or does a change appear later? Subgroup analyses were carried out with all background variables, for the intervention group and the control group and the individual pharmacies, to assess whether they were comparable for background variables.

Additional analyses were done with a sub-sample of pharmacies. The selection was based on the level of exposure of the participating pharmacies to the intervention programme and resulted in six pharmacies that met two criteria: the technician reported spending  $\geq 40$  hours on "patient education development tasks" in the intervention period of one year, and the planned activities were reported

to have been carried out in the pharmacy at T1 (Figure 1). These were termed the "high exposure" pharmacies.

## Results

### Response

Table 1 shows that at T0, T1 and T2, 500 questionnaires were sent to every pharmacy in our study. At T0, pharmacies reported the distribution of 11,767 questionnaires, 6,341 of which were returned to the university (54 per cent). In the second survey (at T1), distribution of 11,823 surveys was reported, of which 5,199 were returned to the university (44 per cent). Data from 24 pharmacies were used for the analyses. For the long-term effect measurement, 7,000 questionnaires were sent to the 14 pharmacies in the intervention group. Of the 4,769 questionnaires that were distributed by 11 pharmacies, 2,034 were returned (43 per cent).

Two pharmacies in the intervention group dropped out of the study at T1 and were not included in the short-term analyses, nor were their controls. A further two pharmacies in the intervention group provided no data at T2, which resulted in 10 pharmacies at T2. The patient samples were reported by pharmacists and technicians to be representative of their pharmacy population.

### Characteristics of respondents

Table 2 presents the background variables with the outcome variables at T1. Three out of seven background variables correlated significantly with the outcome variables: education, sex and OTC consumption. A higher educational level was significantly associated with a less positive opinion on all items ( $P < 0.001$ ), women had less positive opinions than men about waiting time ( $P < 0.001$ ) and ease of asking questions ( $P < 0.05$ ), and patients using more OTC medicines had less positive opinions about waiting time ( $P < 0.001$ ), ease of asking questions ( $P < 0.05$ ) and the answers they received to questions about medication ( $P < 0.05$ ).

As the data collected at the three time points originated from independent samples, tests were conducted to assess whether the populations were comparable with regard to

**Table 1** Response rates to patient questionnaires.

	T0 Number (%)	T1 Number (%)	T2 Number (%)*
Sent to the pharmacies	14,000	14,000	7,000
Distributed by pharmacies	11,767	11,823	4,769
Returned questionnaires	6,341 (54 <sup>†</sup> )	5,199 (44 <sup>†</sup> )	2,034 (43 <sup>†</sup> )
Analysed questionnaires	5,620 (48 <sup>†</sup> )	4,983 (42 <sup>†</sup> )	2,015 (42 <sup>†</sup> )

\*Only the pharmacies in the intervention group.

<sup>†</sup>Percentage of the distributed questionnaires.

**Table 2** Correlation matrix of outcome and background variables (n = 5,199).

	Helpfulness	Waiting time	Ease of asking questions	Satisfaction with answers	Satisfaction with leaflets
Gender	-0.006	-0.087 <sup>†</sup>	-0.031*	-0.005	0.016
Age	0.125 <sup>†</sup>	0.204 <sup>†</sup>	0.095 <sup>†</sup>	0.088 <sup>†</sup>	0.146 <sup>†</sup>
Education	-0.103 <sup>†</sup>	-0.222 <sup>†</sup>	-0.054 <sup>†</sup>	-0.067 <sup>†</sup>	-0.125 <sup>†</sup>
Number of visits to pharmacy this year	0.113 <sup>†</sup>	-0.018	0.068 <sup>†</sup>	0.089 <sup>†</sup>	0.088 <sup>†</sup>
Number of years client of pharmacy	0.023	0.042 <sup>†</sup>	0.044 <sup>†</sup>	0.051 <sup>†</sup>	0.046 <sup>†</sup>
Number of prescription medicines	0.119 <sup>†</sup>	0.053 <sup>†</sup>	0.081 <sup>†</sup>	0.095 <sup>†</sup>	0.110 <sup>†</sup>
Number of OTC medicines	-0.002	-0.101 <sup>†</sup>	-0.028*	-0.031*	-0.007

Spearman correlation coefficient: \* $P < 0.05$ ; <sup>†</sup> $P < 0.001$ .**Table 3** Comparison of samples on background variables (T0–T1).

Variable	Intervention group (12 pharmacies)		Control group (12 pharmacies)	
	T0 n = 2,855	T1 n = 2,726	T0 n = 2,765	T1 n = 2,257
% women	64.4	63.2	66	64.6
Mean age (SD)	59.42 (16.90)	58.75 (16.17)	55.70 (16.30)	55.24 (16.14)
Education:				
primary school	19.2%	19%	14.4%	14.2%*
lower secondary	34.6%	33.2%	37%	33.7%
higher secondary	26.4%	25.1%	25.6%	26.2%
higher professional/academic	17.3%	19.7%	21.1%	23.4%
Visits pharmacy last year:				
1–3 times	13.3%	13.3%	15.4%	15.4%
4–6 times	29.8%	31%	31.9%	32.3%
≥7 times	56.3%	55.2%	52.3%	51.8%
Client of this pharmacy for:				
< 1 year	2.3%	2.9%	3.7%	4.4%
1–2 years	4.7%	4.3%	5.9%	6.1%
> 2 years	92.8%	92.7%	90.2%	89.2%
Number of prescription medicines used last week:				
0	11.1%	12%	13.3%	13%
1–2	46.9%	46.4%	49.1%	47.9%
3–5	31.5%	30.3%	28.5%	29.3%
≥6	9.9%	10.7%	8.9%	9.4%
Number of OTC medicines used last week:				
0	61.1%	58%*	58.4%	56.3%
1–2	29.5%	33.7%	33.5%	36.2%
3–5	2.3%	2.5%	3%	2.6%
≥6	0.6%	0.5%	0.7%	0.5%

\*significant difference between T0 and T1 ( $P < 0.05$ ).

background variables and these data are shown in Table 3. The data show a significant difference in the intervention group between the number of OTC medicines taken at T0 and T1 ( $P < 0.05$ ).

In the sub-sample of “high exposure” pharmacies that had implemented more elements of the intervention, differences between T0 and T1 were found with regard to OTC medication and age ( $P < 0.05$ ). Age was lower at T1. In the control group pharmacies, differences were found

with regard to educational level ( $P < 0.05$ ). The educational level was lower at T1. At T2, no significant differences with regard to background variables were observed compared with T1.

To explore to what extent the background variables would explain the differences found in the outcome variables, a linear regression analysis of “experienced helpfulness” with the background variables was carried out. It showed that “helpfulness” would be expected to be higher

when age, the number of visits and the number of prescription medicines were higher. However, this model explained only 2.5 per cent of the variance in "helpfulness". This finding indicates that these background variables are poor predictors of satisfaction with helpfulness, and are therefore unlikely to have a substantial influence on the studied outcome variables and their meaning with respect to the evaluation of the intervention.

#### Patient opinions about pharmacy services

Table 4 shows that at baseline (T0), respondents were on average (very) satisfied with the services provided by their pharmacy. They reported that pharmacy employees were very willing to help them and very friendly (7 on an 8-point scale). Waiting time was almost never reported to be a problem for them (4.3 on a 5-point often to never scale),

they were satisfied with the patient leaflets available (4.3 on a 5-point very dissatisfied to very satisfied scale) and appeared to find it easy to ask questions about medication (4.4 on a 5-point very difficult to very easy scale). Nevertheless, 11.1 per cent of the patients indicated that it was sometimes difficult to ask questions in the pharmacy.

Table 5 shows that the most frequently stated reasons for experiencing difficulties with asking questions were: "Other patients can hear what we are talking about" (16.9 per cent); "other patients have to wait longer" (8.8 per cent); and "employees are very busy" (6.7 per cent). Patients were satisfied with the answers to their questions in their pharmacy (4.4 on a 5-point very dissatisfied to very satisfied scale), and only 3.9 per cent reported being less satisfied with this item. The most frequently stated reason in this respect was "I receive too little information" (7.5 per cent of all respondents).

**Table 4** T0-T1 changes in patients' satisfaction with pharmacy services.

Variable	Intervention group		Control group	
	T0 Mean (SD)	T1 Mean (SD)	T0 Mean (SD)	T1 Mean (SD)
Helpfulness (2 items) (2-8)	7.05 (0.87)	7.13* (0.88)	7.03 (0.91)	7.05 (0.89)
What do you think about the waiting time? (1-5)	4.40 (0.76)	4.39 (0.81)	4.08 (0.97)	4.08 (1.00)
How easy is it for you to ask questions? (1-5)	4.39 (0.71)	4.41 (0.71)	4.36 (0.76)	4.36 (0.76)
Are you satisfied with the answers to your questions?(1-5)	4.47 (0.58)	4.48 (0.58)	4.45 (0.60)	4.45 (0.61)
Are you satisfied with the patient information leaflets that you get? (1-5)	4.28 (0.57)	4.29 (0.54)	4.23 (0.57)	4.22 (0.57)
Total number of patients	2,855	2,726	2,765	2,257

\*Significant difference ( $P=0.001$ ) between T0 and T1 (independent samples t-test) Higher values are more positive.

**Table 5** Patients' information needs at baseline (T0).

Variable	Intervention and control group T0 (%)
If you were worried about side effects of your medication, who would you talk to?	
GP	84.9
Pharmacy employee	59.5
Family	9.4
Friend	5.8
Somebody else	2.8
Nobody	1.3
What can make asking questions more difficult for you?	
Employees are very busy	6.7
Employees do not have enough knowledge	1.3
Employees do not like questions	0.4
Employees are not helpful	0.7
Other patients have to wait longer	8.8
Other patients can hear what we are talking about	16.9
Another reason	3.9
If you are less satisfied with answers to questions, what are the reasons?	
I receive too little information	7.5
I get incorrect information	1.3
The information worries me	2.9
I do not understand the information	3.3
Total number of patients	5,620

Although most of the respondents (84.9 per cent) said they would talk to a general practitioner (GP) if they were worried about side effects from their medication, almost two-thirds (59.5 per cent) said they would talk to a pharmacy employee about side effects (Table 5). At T1, this percentage had increased significantly to 64 per cent, both in the intervention and the control group. These results show that the pharmacy is an important source of information about side effects.

### Short-term evaluation of patient satisfaction

Table 4 shows the short-term outcomes from the T0–T1 differences in the outcome variables in the intervention and the control groups. Two questions (“How helpful are the pharmacy technicians” and “How friendly is the service”) were combined, as they had previously shown a Cronbach’s alpha of 0.68. This scale was termed “Helpfulness” and a t-test revealed a significant increase between T0 and T1 in the intervention group that was also present in the selection of “high exposure” pharmacies ( $P < 0.05$ ). There were no significant differences between T0 and T1 for the other outcome variables: problems with waiting time, ease of asking questions, satisfaction with answers to questions and with information leaflets. “High exposure” pharmacies did not show any differences.

Stratified analyses of the outcome variables by pharmacy, sex, age, education, number of visits to the pharmacy and number of prescription medicines taken in the last week did show some differences between T0 and T1 on pharmacy level.

### Long-term evaluation of patient satisfaction in the intervention group

Table 6 shows the long-term evaluation in the intervention group. A t-test of “Helpfulness” revealed no significant differences between T1 and T2 in the intervention group, neither were effects found in the “high exposure” pharmacies. The increased level found at T1 compared with T0 was sustained at T2.

The other variables (problems with waiting time, ease of asking questions, satisfaction with answers to questions

and with information leaflets) did not show significant differences between T1 and T2. There were no differences between “high exposure” pharmacies and the others. As in the short-term analyses, stratified analyses of the outcome variables by pharmacy, sex, age, education, number of visits to the pharmacy and number of prescription medicines taken in the last week did not show any overall differences in specific subgroups.

## Discussion

The findings of this large, controlled study showed a high level of patient satisfaction at baseline. Following the intervention, there was a small positive change in patients’ ratings of “helpfulness” in intervention but not control pharmacies. This increase was sustained one year later. Overall, patients were satisfied with helpfulness, waiting time, patient information leaflets, ease of asking questions and with the answers to their questions about medicines. We found that community pharmacies are a vital source of information for patients, as almost two-thirds said they would talk to a pharmacy employee if they were worried about side effects. This percentage had increased after one year both in the intervention and control groups, which indicated that the pharmacy’s role in providing advice might be increasing in Dutch pharmacies. This might be due to the efforts of the professional organisation of pharmacists in the Netherlands (KNMP), which has continuously advocated the role of the pharmacy in communicating with patients about their medication. Patients seem to perceive their pharmacy as a valuable drug information source. However, when asking questions about medicines in the pharmacy, patients reported some difficulties with their privacy, the waiting time and perceived time pressures. The most important reason for being less satisfied with answers to questions about medicines was receiving too little information.

Our finding that female, younger and more highly educated patients were less satisfied with the services of their pharmacies is consistent with the findings from other studies.<sup>10,15,16</sup> There were some significant differences in age and educational level of respondents between T0 and

**Table 6** T1–T2 changes in patients’ satisfaction with pharmacy services.

Variable	Intervention group		
	T0 Mean (SD)	T1 Mean (SD)	T2 Mean (SD)
Helpfulness (2 items) (2–8)	7.06 (0.86)	7.13 (0.87)	7.17 (0.85)
What do you think about the waiting time? (1–5)	4.37 (0.78)	4.36 (0.83)	4.36 (0.81)
How easy is it for you to ask questions? (1–5)	4.40 (0.70)	4.42 (0.70)	4.43 (0.72)
Are you satisfied with the answers to your questions? (1–5)	4.47 (0.57)	4.48 (0.58)	4.52 (0.56)
Are you satisfied with the patient information leaflets that you get? (1–5)	4.29 (0.55)	4.30 (0.54)	4.30 (0.56)
Total number of patients	2,315	2,186	2,015

Higher values are more positive.

T1 but the stratified analyses and regression gave no basis to infer that these factors were influential predictors of the outcome variables. However, when interpreting our results it should be noted that the large number of respondents might in itself be responsible for the significance of the differences found with regard to background variables.

Weiss<sup>11</sup> found that socio-demographic (background) characteristics are less important predictors of satisfaction than having a regular source of care and being satisfied with life in general. This is consistent with our finding that the background variables in this study were poor predictors of "helpfulness".

The usefulness and appropriateness of the combination of two questionnaire items to form the "helpfulness" scale is open to discussion. We chose to construct this "scale" because scaling makes it possible to conduct more sophisticated (parametric) analyses, although we accept that the results of such analyses should be interpreted with caution. Using a non-parametric test would have led to loss of information from our data because rank numbers were assigned to the original data. However, the "helpfulness" scale should be tested further in future research.

As we did not observe the actual behaviour of pharmacy employees with respect to their communication with patients, the results of this study can only provide information on patients' evaluations of this behaviour.

Response rates were adequate but not high in the three surveys at T0, T1 and T2 (54 per cent, 44 per cent and 43 per cent, respectively). A possible explanation for the response rates is that the questionnaire had to be sent back to the university, which respondents might see as less personally relevant than their own pharmacy. Mentioning the university as the source of the research rather than the patient's own pharmacy might also have decreased the response. We did not study the non-responders of this study so are unable to comment on the representativeness of the respondents. The participating pharmacies reported that they had distributed the questionnaires to a representative sample of their patient population. We could not reach the patients that did not visit the pharmacy themselves and might have different views, but as this study was about services provided by staff to patients visiting the pharmacy, another study would be needed to obtain feedback from those who did not. The specific reasons for the research were not revealed to the patients to prevent the bias of socially desirable answers.

This study was conducted in a group of pharmacies that had previously shown themselves to be patient-oriented, which means that the results found might be more positive than for the average Dutch pharmacy. It should also be noted that people have a general inclination to give high ratings for their levels of satisfaction, even when they are not completely satisfied.<sup>10,15-17</sup> This paradox is also illustrated by our findings: more respondents reported barriers to asking questions and reasons for being less satisfied than the number of respondents that reported having difficulties with asking questions and being less satisfied with the answers they received.

As each pharmacy decided during the intervention which area they would target, it was not possible to design

a pharmacy- (or medication/disease-) specific questionnaire for this study. For instance, one pharmacy aimed to improve advice with OTC medication, whereas another worked on advice for patients presenting a first prescription for asthma medication. Therefore it was necessary to use a general measurement instrument.

Identifying any effects of the pharmacy-level intervention on patient satisfaction was not the only aim of this study. We wanted to explore the overall level of patient satisfaction and, within that, any effect of the changes that had occurred in the intervention pharmacies. With respect to finding a direct effect of the intervention on patient satisfaction, the expectations were not very high because:

- the intervention focused on the organisation of patient education
- the effect measurement was carried out when only six out of 12 pharmacies had started their newly planned activities.

The technicians who had to organise patient education activities reported that they could not spend the number of hours needed on these activities. Pharmacies did not participate in the intervention equally, so there was between-pharmacy variation in the intensity of the intervention. Furthermore, the organisational and practice changes required from the education programme are likely to have taken a long time to become embedded. This might have limited the effects of the intervention at patient level.

## Conclusion

The overall findings on patient satisfaction showed that almost two-thirds of the respondents saw the pharmacy as a source of information about medication. Community pharmacies clearly have an important role in providing such information. Lack of privacy was the most common reason for patients reporting difficulties in asking questions about medicines and this needs pharmacists' attention.

Although the evidence is not very strong, our analysis showed a slight increase in the "helpfulness" of pharmacy staff reported by patients. "Helpfulness" slightly increased in the intervention period (T0-T1 differences) and appeared to have remained at the higher level one year later (T2). The intervention might have had greater effects if the technicians could have spent more time on their task of organising patient education. Therefore the results of the evaluation of the intervention should be interpreted carefully.

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