Needs and use of drug information sources in community pharmacies: a questionnaire based survey in German-speaking Switzerland

• Simon Zehnder, Marianne Beutler, Rudolf Bruppacher, Thomas Ehrenhöfer and Kurt E. Hersberger

Pharm World Sci 2004; 26: 197–202.

S. Zehnder (correspondence, e-mail: szehnder@datacomm.ch), **R. Bruppacher, T. Ehrenhöfer, K.E. Hersberger:** Institute for Clinical Pharmacy, Pharmaceutical Care Research Group, Pharmacenter, University of Basel, Klingelbergstrasse 50, 4056 Basel, Switzerland
M. Beutler: Medicines Commission of Swiss Pharmacists (AKA), Egg, Switzerland

Key words
Community pharmacy
Drug information
Future developments
Information use
Information need
Internet
Questionnaire
Survey
Switzerland

Abstract
Objectives: To explore the types of drug information used by pharmacists in daily practice, their needs and wishes concerning drug information and their opinions about future changes of pharmacy practice.
Methods: Postal survey to a random sample of 223 (26% out of 859) community pharmacies from the German-speaking part of Switzerland. The 48-item questionnaires were processed automatically with the Cardiff TELE*form*®-Software. In addition, a telephone-survey to a random sample of 20 non-responders was performed in order to test for non-response bias.
Results: A total of 108 pharmacists (response rate 48%) reported that the official Swiss drug reference book is still the most popular source of drug information used to solve all kinds of drug related problems. The Internet as a source of drug information is of minor importance, even though 88% of the pharmacies have Internet access. Deficits in drug information were reported for paediatrics, phytotherapy, drugs during pregnancy/lactation and for therapy guidelines. According to 35% of the pharmacists, the importance of offering drug information to customers will increase in the future. Most of the pharmacists are not afraid that Internet pharmacies would replace them.
Conclusions: The results show that the majority of the community pharmacists are only partially satisfied with the sources of drug information currently available. The Internet still plays a minor role for solving drug-related problems in daily practice, even though the available infrastructure makes the community pharmacies able to use the Internet more frequently. The pharmacists need more websites tailored to their needs. The pharmacists have clear visions about possible future developments. They do, however, have to adopt quickly to the changes ahead in order to remain competitive.

Accepted September 2003

Introduction

Appropriate drug information is vital for the correct use of drugs. Common situations in community pharmacy, such as adverse drug reactions, drug-drug interactions or drug use during pregnancy and lactation, require the access of drug information sources. The information sources have to be up-to-date, accurate, user-friendly and trustworthy. The Swiss pharmacists' occupational image states that the pharmacist is responsible for the counselling of other health professionals and patients regarding drug therapy and health issues[1]. Since July 2001, Swiss pharmacists receive a special fee for dispensing and counselling, which is separated and independent from the costs of the prescribed drugs. The new system emphasizes the shift away from the focus on products only toward the focus on counselling[2].

A recently conducted expert survey[3, 4] on developments of information technologies in medicine and their influence on pharmacy practice in Switzerland yielded the following statements: a) To remain competitive in the future, the community pharmacy has to transform more into an information centre; b) In order to become a contact point for all sorts of health related problems, the community pharmacists need appropriate drug information sources which have to be easily accessible, up to date, trustworthy and addressing the needs of the patients demanding fast access to information; c) As patients get access to the same information sources as health professionals, the community pharmacists need to be able to support patients in interpreting the information; d) As the importance of information available on the Internet increases, the community pharmacists need to be familiar with the new information technologies; e) Websites approved by independent agencies should become essential drug information sources for pharmacies; f) The knowledge obtained at the university is often outdated after a few years. The pharmacists should take part in continuing professional development programmes to update their knowledge in order to provide the best possible service to their patients.

Consumers value pharmacists' provision of information about the appropriate use of medication and the assurance that prescriptions are dispensed correctly. Pharmacists are viewed as providing valuable advice on a range of health issues when requested[5].

The last study investigating the use of drug information sources in Switzerland in 1986 showed, that pharmacists primarily use reference books and textbooks as sources of drug information[6]. Also in Spain and in Hong Kong, the official reference books were the most widely used information sources[7–8]. In Japan, pharmacists obtained drug information primarily from medical representatives of pharmaceutical companies[9].

This present study focuses on the use, needs and wishes of drug information with special focus on new information technologies. Additionally, pharmacists' attitude towards possible future developments that could affect their daily practice is investigated. The following questions were raised: which sources of drug information are used in pharmacy practice and how are they used? In which situations are the pharmacists dissatisfied with the available drug information sources? How many pharmacists have access to the Internet and also use it as a drug information source? What is the pharmacists' attitude towards possible developments that could affect pharmacy practice in the future?

Methods

Participating community pharmacies

A stratified random sample of 223 (26% out of 859) community pharmacies from the German-speaking part of Switzerland was included. At least one pharmacy from each of the 21 cantons was represented.

Questionnaire

The questions were selected based on the previously performed expert survey[3] and had either pre-set responses (four-point Likert scales or yes–no options) or were open questions. The questionnaire was piloted on 12 community pharmacists. The final questionnaire, consisting of a total of 48 questions, addressed the following topics: 1) Use of drug information sources in daily practice; 2) Use of drug information sources to solve specific drug-related problems; 3) Pharmacists' perspective of the professional future; 4) Infrastructure of the pharmacy; 5) Demographic data. The postal survey was conducted within three weeks in May 2001 to June 2001.

Data was collected anonymously. The pharmacies' addresses (separated form the questionnaires) were needed to identify those who did not respond within three weeks in order to contact them with a reminder. The reminder was sent three days after the deadline.

Telephone interviews with non-responders

In order to test for non-response bias, 4 questions (concerning the use of the Internet and demographic data) from the original questionnaire were selected for a telephone interview to a random sample of 20 non-responders.

Data collection an analysis

The software 'TELE*form*® Standard Version 7.0' from Cardiff Inc. was used for designing and processing the questionnaire. After transferring the data to an Access® database, SPSS® was used for statistical analysis.

Data quality assurance was conducted by randomly selecting 5% of all cases following data entry and cross checking the hard copy with the coding frame and entry. No mis-codings were found.

Results

Proportion of questionnaires returned

After the follow-up, 108 of 223 pharmacists had replied (48% response rate).

Pharmacist demographics

Of the 108 participants, 55% were male. The age distribution was: < 40 years: 44%; 41–60 years: 48%; > 60 years: 8%. Of the participating pharmacists, 57% were pharmacy owners, 27% were pharmacy managers and 16% were employed pharmacists.

Telephone interviews of the non-responders

The non-responders were asked four questions by phone. Chi square analyses were conducted to determine if the individuals who took part in the survey were significantly different from those who did not take part in the survey. There was no significant difference between responders and non-responders and the availability to Internet ($\chi^2 = 0.929$; $P = 0.335$), or the use of the Internet for e-commerce purposes ($\chi^2 = 3.147$; $P = 0.076$). However, the participants used the Internet significantly more often than the non-responders for communication via e-mail ($\chi^2 = 8.598$; $P = 0.03$), for ordering drugs ($\chi^2 = 7.184$; $P = 0.007$), pharmacy homepage services ($\chi^2 = 4.812$; $p = 0.028$) or for the retrieval of drug information ($\chi^2 = 14.131$; $P = 0.001$).

Pharmacists' perspective of the professional future

Based on the findings from the previously conducted expert survey[3], the pharmacists were asked their opinion on possible future developments concerning pharmacy practice. Figure 1 illustrates the following scenarios: A: 'The focus of community pharmacy transforms more and more from products to patients as it is becoming an information centre.' B: 'The Internet will be an indispensable tool for the community pharmacist in the future.' C: 'In the future the community pharmacist will increasingly be active in the field of diagnostics and screening.' D: 'Virtual pharmacies (e.g., Internet pharmacies, call centres) will (partially) displace traditional community pharmacies.'

The pharmacists either mostly agree (38%) or totally agree (42%) that the Internet will be an indispensable tool in the future but opinions are divided

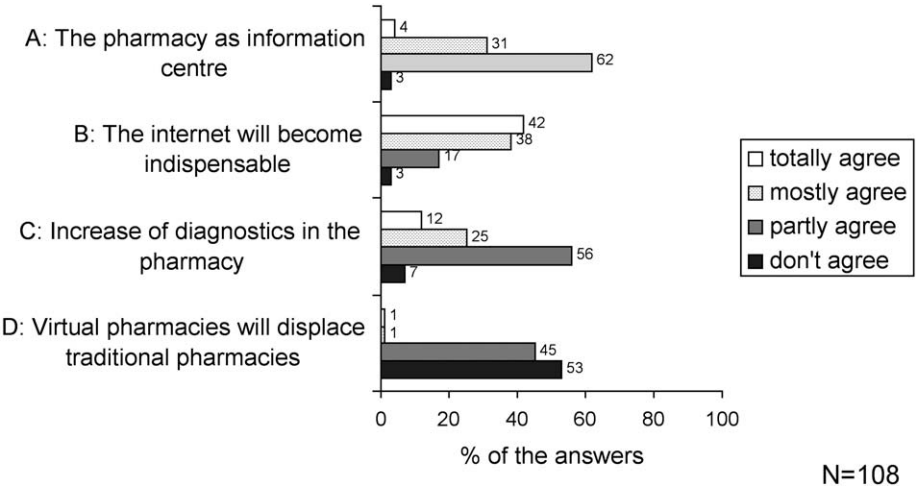

Figure 1 *Pharamacists' perspective of the professional future.*

with respect to the extent of transformation into an information centre (62% partly agree). The pharmacists are split in their views (45% partly agree / 53% do not agree) on virtual pharmacies replacing classic community pharmacies and it is not expected that pharmacists will increasingly be active in the field of diagnostics in the future (56% partly agree). The establishment of electronic networks (e.g., electronic prescribing, electronic cards containing health related patient data) between physicians, patients and community pharmacies is not welcomed by 63% of the pharmacists.

Use of drug information

Figure 2 illustrates the use of drug information sources by community pharmacists to solve drug related problems in daily practice. The classic reference books (e.g., the official Swiss drug reference book) are most frequently used followed by information provided by manufacturers, journals for continuing education and textbooks. The use of the Internet as a source of information has been declared by 10% as often and by 30% as sometimes.

Use of drug information to solve specific drug-related problems

The participants were asked what sources of drug information they would use to solve specific drug-related problems were confronted with in daily practice. The following scenarios were presented:

(1) A customer travels to Ethiopia and would like to get information about the necessary vaccinations.
(2) Where do you get the information about the possible adverse drug reactions of a specific drug?
(3) Where do you get the information allowing you to compare different OTC antihistamines against allergic rhinitis?
(4) You are being asked by a physician whether you have the newest information concerning the dosage of Singulair® for children younger than six years.
(5) You are asked whether a husband needs treatment as well due to his wife's vaginal mycosis? (therapy guidelines)
(6) A customer wants to know whether you can provide her with information about 'Uwemba', a new 'wonder drug' against malaria she heard about in the media.

The three most commonly used sources of drug information for each presented scenario are summarised in Table 1. The results show that the official Swiss reference book was the most frequently used source of information in four of the six presented scenarios. Additionally, the pharmacists were asked whether they were satisfied with the available drug information sources and what deficits they experienced to solve the specific problems. Between 17% and 46% of the pharmacists are only partially satisfied with the available drug information sources for the presented scenarios.

The pharmacists expressed specific deficits in drug information sources for the following fields: alternative medicine (nine mentions), paediatrics (nine mentions), pregnancy / lactation (seven mentions), therapy guidelines (seven mentions), drug news (five mentions), foreign drugs (four mentions), phytotherapy (four mentions) and lifestyle drugs (four mentions).

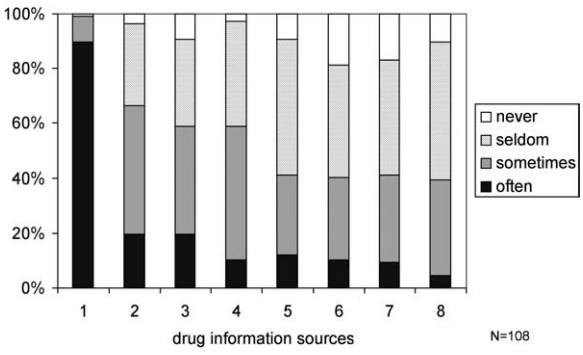

Figure 2 *Use of different information sources in community pharmacies.*

Use of the Internet

There was at least one personal computer connected to the Internet in 88% of the pharmacies. The Internet in community pharmacies is used for (multiple answers): e-mail (90%), retrieval of drug information (89%), ordering (47%), pharmacy homepage (41%) and e-commerce (14%).

The Internet is used to retrieve drug information at least once a day by 17%, several times per week by 20%, several times per month by 37% and 19% use it less than once a month. Seven percent of the pharmacists do not use the Internet at all for the retrieval of drug information. An overwhelming majority (96%) of the pharmacists reported that a list of Internet addresses to reliable drug information sites aimed at pharmacy practice would be of great benefit. Already, 56% of the pharmacists had encountered customers who had found drug information on the Internet and asked the pharmacist for support for the interpretation of the information.

The fact that most scientific information is provided in English (and not in German, especially on the Internet) is considered a problem for 43% of the pharmacists. There was no significant coherence ($\chi^2 = 1.683$; $P = 0.794$) regarding the age of the respondents and the difficulties with the English language.

Discussion

In accordance with the experts[3] the pharmacists do not expect virtual Internet pharmacies or call-centres to become serious competition in the future. Only a small minority of the pharmacists disagree with the transformation of the community pharmacy into a drug information centre. The fact that already 56% of the participants were faced with patients who wanted support with the interpretation of information found on the Internet, highlights the importance of developing skills for interpreting, assessing and selecting relevant drug information.

Pharmacists will increasingly be required to provide high quality drug information to satisfy the patients and become reliable drug information centres. Pharmacists should aim to play a key role in the provision of objective information on drugs[10–12]. The skills on how to use new information technologies will become essential for the pharmacist as a drug information interpreter[3]. Next to the availability of appropriate drug information sources, the ability to communicate the

information to the patient is just as important[3–4]. Several studies showed, that extensive counselling and education in community pharmacies (e.g., pharmaceutical care programs for asthma patients) have positive impacts on patients' vitality[13–14].

Opportunities for extended roles for community pharmacies including new diagnostics (e.g., diabetes screening, cholesterol measurements) are not perceived as important by the respondents. An explanation could be that health insurance in Switzerland does not reimburse such tests if they are performed by a pharmacist. As the 1653 Swiss pharmacies are visited by 300,000 customers each day, the pharmacists are in a good position to get more involved in the field of diagnostics and prevention[11]. The success of the 2002 'Self-Care Campaign: Stop Sugar' with 100,000 blood sugar measurements during a 4-week period in 685 Swiss pharmacies highlights the potential of diagnostics and prevention in pharmacies[15].

To solve drug-related problems of all sorts, the pharmacists primarily use the official Swiss drug reference book[16]. The official Swiss drug reference book, as all official texts, has to undergo a scrupulous validation process which takes time. The official Swiss drug refer-

Table 1 *Drug information sources to solve specific drug-related problems (*N = *108)*

Problem	*Drug information sources (the three most frequently used sources; spontaneous answers)*	*Mentions as first choice*	*Total number of mentions (1^{st}+2^{nd}+3^{rd} choice)*	*Are you satisfied with the available drug information sources?*		
				Yes	*Partially*	*No*
Vaccination (*n* = 167; 5 different sources used)	Tropimed® (software)	35%	38%	82%	17%	1%
	Swiss health office journal	22%	40%			
	Swiss Tropical Institute	1%	12%			
	Deficits mentioned: details, up-to-dateness, information on the Internet					
Adverse drug reactions (*n* = 159; 8 different sources used)	Official Swiss reference book	61%	64%	77%	23%	–
	Textbooks	–	10%			
	Pharmacy software	5%	8%			
	Deficits mentioned: up-to-dateness, relevance, time					
Comparison of drugs (*n* = 167; 9 different sources used)	Official Swiss reference book	25%	38%	68%	29%	3%
	Journals	7%	16%			
	Reference book (Codex)	7%	14%			
	Deficits mentioned: comparisons, time, details					
Children dosage (*n* = 176; 9 different sources used)	Official Swiss reference book	25%	34%	61%	34%	5%
	Drug company call centre	15%	32%			
	Written information provided by the drug company	7%	14%			
	Deficits mentioned: up-to-dateness, Internet, reliability of the information					
Therapy guidelines (*n* = 150; 10 different sources used)	Official reference book	29%	36%	60%	40%	–
	Textbooks	7%	15%			
	Own knowledge / experience	11%	11%			
	Deficits mentioned: information about the diagnosis, continuing education					
'Wonder drug' (*n* = 169; 10 different sources used)	Internet search	26%	43%	46%	46%	8%
	Specific pharmacy call centres	13%	25%			
	Pharmavista (software)	8%	10%			
	Deficits mentioned: reliability of the information, Internet, time					

ence book does therefore not provide the newest available information, although updates are published several times per year. Thus the reliance on this book could in some situations lead to outdated information. Already in 1986, the official Swiss drug reference book was the most popular source of drug information in Switzerland[6]. Also in other countries (Spain, USA, Hong Kong) pharmacists named reference books as the most popular sources of drug information[7–8, 17].

Even though the pharmacists agree on the indispensability of the Internet in the future, it still plays a minor role for solving drug-related problems in daily practice, although for a lot of problems it often provides the most updated information. Only in the search for information about the 'wonder drug' it was used as primary source of information. In Japan (1998), 20% of the pharmacists used the Internet as a source for drug information[9]. There could be several reasons for not using the Internet in a more extensive way, such as pharmacists do not know where to look for the information, pharmacists have difficulties in judging the quality of the information or there are only a few sites in German tailored to the needs of pharmacists.

The fact that 96% of the pharmacists requested a list of reliable Internet sources illustrates that they feel uncertainty when using the Internet as an information source. Responding to this request, the Pharmaceutical Care Research Group of the University of Basel has published a list of useful, recommended Internet links for community pharmacists. (available at http:// www.pharma.unibas.ch/pharmacare/links_index.html). A good example for an Internet-based information source tailored to needs of the pharmacists and, as shown in Table 1, is already widely used for travel related health measures, is the database Tropimed® available on CD-ROM and Internet. (available at http://www.tropimed.ch)

Information provided by the drug manufacturers is also often used. The objectivity of this information has to be considered together with the reputation of the provider. General textbooks containing older but often better validated information still play an important role in daily practice to solve drug-related problems.

Depending on the presented problem, between 17% and 46% of the pharmacists were dissatisfied with the available information sources. Several times the pharmacists considered the available drug information as not up to date, and too time consuming in daily practice. In 1986, 20% of the Swiss pharmacists were dissatisfied with the available drug information sources[6]. According to the experts[3], future drug information for pharmacists needs to be short, easily accessible, up to date and trustworthy in order to address the needs of the patients.

While many pharmacists reported deficits in drug information for paediatrics or pregnancy and lactation, good information is available on these delicate topics, either in journals, textbooks and the Internet. Another deficit was seen in the field of alternative medicine, where clinical studies and clear therapy guidelines are lacking. Almost 90% of the pharmacists have access to the Internet. In comparison, 38% of the Swiss population[18] and 75% of the Swiss physicians[19] use the Internet. Pharmacists use the Internet mainly for communication purposes (e-mail). In the UK (2000), 80% of the pharmacists have Internet access and use it particularly for e-mail[20]. There is clearly a need for websites tailored to the needs of community pharmacists in order to better support their counselling activities.

Conclusions

Pharmacists seem to lack knowledge about the variety of the available drug information sources. They should be informed in continuing education seminars about the newest available drug information sources and how to use them. The Swiss Pharmaceutical Society is establishing a structured, credit-point based continuing education system for pharmacists to meet these challenges[21].

The pharmacists have clear visions about possible future developments that could influence their daily practice. They agree for the most part with the opinions of the experts[3–4]. It is now up to the pharmacists to take the next steps and adopt quickly to the changes that lie ahead in order to remain competitive. Continuing education and appropriate drug information sources (e.g., Internet sites tailored to the needs of the pharmacists) will be necessary to support the pharmacists to take those steps. It can be expected that the pharmacists will use the new information technologies more extensively as soon as attractive tools are available.

Further work

A study is currently under way to investigate the use and needs of patients regarding drug information. Of special interest are the patients' perceptions of the community pharmacy as a source of drug information. This study should better help the pharmacists to address the needs of the patients.

Limitations of the study

The pharmacists represented in the study use the Internet in more extensively than those not represented in this study. This study reflects the situation in Swiss German-speaking pharmacies in May 2001 to June of 2001. The study would have to be repeated on a regular basis in order to monitor the ways pharmacists use the different sources of drug information in the future.

Acknowledgements

We would like to thank the reviewers for their helpful comments.

Funding

The study was financially supported by Documed AG and e-mediat AG.

Possible conflicts of interest

None.

References

1 Schweizerischer Apothekerverband. Berufsbild Offizinapotheker. [Occupational image of community pharmacists.] 3 April 2001. http://www.pharmagate.ch (9 June 2001).

2 Brentano M, Schips B. System zur Honorierung der Apothekerleistungen. [Fee for service system for pharmacists.] Zürich: vdf Hochschulverlag AG an der ETH Zürich, 2001.

3 Zehnder S, Hersberger K, Beutler M, Bruppacher R. Was denken Experten? [What do experts think?] Schweiz Apoth Ztg 2001; 139 (11): 372–4.
4 Zehnder S, Beutler M, Bruppacher R, Hersberger K. Survey on developments of information technologies in medicine and their influence on pharmacy practice in German speaking Switzerland. Proceedings of the 30th European Symposium on Clinical Pharmacy, October 10–13 2001; Antwerp, Belgium. Dordrecht, The Netherlands: Kluwer Academic Publishers, 2002.
5 Stergachis A, Maine L, Brown L. The 2001 national pharmacy consumer survey. J Am Pharm Assoc 2002; 42 (4): 568–76.
6 Ruppanner H. Das Informationsverhalten über Arzneimittel von Ärzten und Apothekern. [Use of drug information by physicians and pharmacists.] Dissertation. Institut für Klinische Pharmakologie. Bern, 1986.
7 Loza Garcia M, Cordero Puentes L, Fernandez-Llimos F, Garcia Corral P et al. Drug information sources used by communtiy pharmacists in Galicia. Pharm Care Esp 2000; 2: 108–22.
8 Chan T, Lee K, Critchley J. The needs and sources of drug information among pharmacists in Hong Kong. J Clin Pharm Ther 1996; 21(5): 325–30.
9 Iguchi S, Ohnishi M, Nishiyama T et al. Community pharmacy practice in Japan – results of a survey. J Clin Pharm Ther 1998; 23 (3): 223–6.
10 Beutler M. Evidence-based medicine. Pharmactuel 2000; 11 (5): 1–26.
11 Kamber M. Rückblende nach einem Jahrzehnt. [Looking back after a decade.] Schweiz Apoth Ztg 2001; 139 (20): 663–5.
12 Weinzierl S. Praxis der Arzneimittelinformationen. [Practice of drug information.] Eschborn: Govi-Verlag, 2002.
13 Schulz M, Verheyen F, Muhlig S et al. Pharmaceutical care services for asthma patients: a controlled intervention study. J Clin Pharmacol 2001; 41: 668–76.
14 Cordina M, Mc Elnay J, Hughes C. Assessment of a community pharmacy-based program for patients with asthma. Pharmacotherapy 2001; 21(10): 1196–203.
15 Sommerhalder M, Ruetz C. Ein Erfolg. [A success.] Schweiz Apoth Ztg 2003; 141(2): 68–77.
16 Morant J. Arzneimittelkompendium der Schweiz. [Swiss drug reference book.] 23rd ed. Basel: Documed AG; 2002.
17 Poirier T, Ascione F. Printed drug information sources used by pharmacists in southeastern Michigan. Am J Hosp Pharm 1980; 37(5): 687–9.
18 EURO-JICs. Pan European Internet Surveys 2000. http://www.ejic.org/main.html (7 May 2001).
19 Koller M, Grütter R, Peltenburg M et al. Use of the Internet by medical doctors in Switzerland. Swiss Med Wkly 2001; 131 (17/18): 251–4.
20 Buisson J. Laying the foundations for a pharmacy e-commerce business. Pharm J 2000; 265: 880.
21 Schweizer Apothekerverband (SAV). Neuer Fachtitel FPH in Offizin- und Spitalpharmazie. [A new specially certification in community and hospital pharmacy.] http://www.pharmagate.ch/data/temp/Pressemitteilung_FPH_D.pdf (17 December 2002).