

The general pharmacy work explored in The Netherlands

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Abstract *Objective* To determine the frequency and nature of general pharmacy work at three Dutch community pharmacies. *Methods* In a purposive and convenience sample of three Dutch community pharmacies the general work was investigated. Multi-dimensional work sampling (MDWS) was used. The study took six weeks: two weeks at each pharmacy. *Main outcome measure* The number of care related items emerging in the general work. *Results* Care related work represented 34% of all pharmacy activities. *Conclusion* Although care related work was present at all three studied pharmacies, this part of the work still needs serious attention of Dutch pharmacists in order to advance pharmaceutical care. It is suggested that an efficient pharmacy organization in combination with robotization, task specialization, and interior design can expand the care related work at the pharmacy.

Keywords Care related work · Community pharmacy · Pharmacy organization · The Netherlands · Work

Impact of findings on practice

- Care related work was vividly present at Dutch pharmacies, but still needs serious attention.
- A well organized pharmacy has latent possibilities to improve pharmaceutical care.
- Robotization, task specialization, and interior design can facilitate pharmaceutical care.

Introduction

It is quite clear today that the simple dispensing of medicine is not enough for a community pharmacy: it is not regarded as part of pharmaceutical care. Various international studies explain why the main part of the work at the pharmacy is or should be care-related, how it can be done, and what positive effects can be expected [1–14]. In a recent study it was argued that Dutch patients are well protected against many drug-related problems [15]. Dutch patients usually visit the same pharmacy and their pharmacies have developed excellent automated medication surveillance and structured high-quality medication counselling. Therefore the provision of pharmaceutical care would be expected to be well represented in the daily activities of Dutch community pharmacies, although to a different extent [16, 17].

This current article concentrates on the frequencies and nature of care-related work as part of the general work at three Dutch community pharmacies. The study was a small exploratory study aiming to report on current practices and to inform on possibilities for future research and intervention. In advance of the methods and results a literature review was made in order to answer the following question: ‘What relevant data were found in other countries?’ A connected article [18] used data from the same field study and described the frequencies and nature of care-related work as part of the counter work and consultation room work.

Literature

Role of the pharmacy assistant

Few studies have analyzed the role of the pharmacy team: pharmacists and pharmacy assistants. That is remarkable

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since there is a central role played by counter assistants in providing advice and in making in-store referrals [19]. However, assistants do not always feel that their role is recognized fully and may feel disenfranchised [20]. While their roles are not necessarily the same as that of pharmacy assistants in the Netherlands, other studies report that advice giving by assistants ranged from 2% to 4% and advice giving by pharmacists ranged from 5% to 79% [21].

Most of the work-related studies seem to concentrate on the work of the pharmacist. In the Dutch situation the role of the pharmacy assistants is of significant importance. In the Netherlands, pharmacists and pharmacy assistants are both allowed to perform the tasks of the dispensing process and work independently apart from checking each other's dispensing. Therefore this current study has analyzed work at the level of the team, regardless of the professional background of the individual, because it corresponds very well to the Dutch situation.

General work

In the context of general work a notable British study concluded that regardless of staffing and prescription workload, community pharmacists perform the same basic tasks [22]. The work content appeared to be a stable factor. While the findings of other studies may again not be necessarily comparable with the Dutch situation, especially because they mainly focus on the work of pharmacists, they report related results and provide a basis for international comparison [14, 23–34]. The findings showed that professional tasks ranged from 17.6% to 53.8% in New-Zealand and Ireland [23, 29, 32]. Communication ranged from 11.1% to 20.6% in the U.S., Canada, and the U.K. [14, 24, 26, 28]. Patient counselling and health-related communication ranged from 3.8% to 10.1% in the U.S., U.K., Ireland, and Australia [24, 25, 27, 29, 33, 34]. Interactions

with patients and counter activities ranged from 5.3% to 24.9% in the U.S., U.K., and New-Zealand [14, 25, 30, 31]. Computer work was 22% in the U.S. [25].

There are many work measurement studies and it is difficult to compare their results because the methods for data collection were as different as the national situation of pharmacy practices. However, the results of three studies do seem to have particular relevance. Firstly, the Dutch category 'care-related activities' and the results of an Irish study at 47 community pharmacists which reported 33.1% of professional activities [29]. The Irish definition of professional activities included health-related communication, prescription review, compounding, drug preparation, and drug selection; all being comparable to the Dutch definitions of care-related activities (compare Table 1). Secondly, the Dutch category 'counter work' and the results of a British study at six community pharmacists which reported 10.6% of the time spent on counter activities [30]. Finally, the Dutch category 'computer work' and a U.S. study at 30 pharmacists in grocery chain stores which reported 22% of the time spent on writing and key boarding [25]. It is presupposed here that the Dutch team work is comparable with the work of pharmacists in an international context. It is therefore concluded that the standards for comparison were 33.1% for care-related activities, 10.6% for counter work, and 22% for computer work.

Methods

The sample of pharmacies was not randomly obtained: the method of recruitment was purposive and convenient. The three Dutch community pharmacies were selected based on their motivation to participate in the study. Two of them coincidentally appeared to be best case practices. Pharmacy 1 was a national prize winner for pharmaceutical innovation. Pharmacy 2 was one of the best in a secret shopper

Table 1 Elements comprising general work

Care related work	
Counter care	Advice on medication, medical aids or disease
Counter other	Helping patients at the counter, not being counter care
Consultation room	All consultations in this room
Telephone	All telephone conversations
Computer work	Prescription-related computer work, not at the counter
Ex tempore preparations	Preparing or making medicine at the pharmacy
Home care work	All tasks in relation with the home care
Other work	
Filling work	Collecting the medication
Logistical work	Ordering and handling medical goods
Office work	Changes in stock, claims, expiry dates control, and quality system
Other	All other activities at the community pharmacy

study for prescription and non-prescription services performed at well-over 500 community pharmacies by the Dutch pharmacy consultancy firm AMP [35]. At pharmacy 3 no such qualifications were reported by the pharmacists.

The data were collected during six weeks in the spring of 2004. Two weeks at each pharmacy. Some basic sample properties were provided by the pharmacists in order to compare the studied pharmacies.

Work measurement techniques

Work measurement comprises seven different techniques [36]. Firstly, subjective evaluation breaks the job down in elemental parts. Participants estimate how much time they have spent performing each task. Secondly, self-reporting invites subjects to document their own use of time continuously in a log or a diary. Some studies propose the use of electronic equipment [23]. Thirdly, productivity data involves the recording of the number of work units completed. For instance, a task series for a single prescription compared with the necessary time for staffing. Fourthly, direct time study is a continuous measurement for a selected time interval. It involves direct observation of specified activities as they are performed. Fifthly, standard time study involves the determination of standard times. This is the average time required for an experienced operator to perform an activity. Sixthly, work sampling technique measures time, the activity of people, machines, or any observable state, condition, or operation. It consists of a large number of observations by trained observers taken at either random [37] or fixed intervals [38]. Seventhly, the multi-dimensional work sampling (MDWS) technique invites participants to record their own activities. They may use either a small portable device if mobile or a console if non mobile. A bleeper sounds at randomly generated times to remind the participant to record their activities at a given time. MDWS may also be regarded as an objective measurement of the proportion of time spent in work-related tasks by recording a series of instantaneous observations in pre-determined or random intervals [25]. MDWS is a relatively new tool to pharmacy practice research.

The use of MDWS has several advantages [25, 36]. It is a good tool when work activities are central, not the person's job. It allows professional activities to be more accurately assessed. It is particular useful for recording activities of mobile staff. It also allows a study to be done easily and economically, alleviating the need to pay a trained observer. This property also eliminates outside observer bias and influence. Moreover, it is useful over long time periods and workers usually prefer MDWS. Consequently, MDWS was chosen as the method for data collection.

MDWS

For the general-work measurement with MDWS pocket-size machines were used. These so-called 'Re-pipip' machines were especially developed by the Swedish company Spedat in Stockholm. It was used at the national corporation of Swedish pharmacies Apoteket AB and reproduced for this Dutch study. The machines made a sound signal in a randomly produced time interval. When the signal is generated the participants choose one, and only one, item from each dimension [36]. With MDWS the number of sounds or bleeps the device emits can be altered to generate the number of observations required for the study. The number of observations required for accurate and representative data in MDWS has been calculated [23]. A total of 14,400 observations is required to describe an activity with $\pm 5\%$ accuracy. A compromise in accuracy to $\pm 10\%$ allows a decrease to 3,600 observations [39]. In a New Zealand study each participant carried a pocket-sized random reminder which signalled randomly 6.4 samples per hour [31]. The rate per hour was based on research from the provider of the machines [40], and was said to be acceptable for the subjects. Other published sampling rates range from 3.2 per hour [41] to 20 per hour [42]. Most rates seem to have been well worked out scientifically. There is however always a balancing problem between the need for density of the data and the practicability for the staff (and consequently compliance of the studied subjects). In this current study it was chosen to set the sampling rates on 3.8 per hour. Good staff compliance was found more important than possible disadvantages for the representativeness of the studied practices. Moreover, the duration of the measurement period was relatively long at each pharmacy.

Induction for the definitions of work

Various studies have applied related but very different categories of care-related work in the context of community pharmacy practice [14, 19–25, 27, 30–34, 37, 38]. On one hand, it could be argued that these studies would provide a good scientific basis for the Dutch definitions. On the other hand, this argument seems flawed for three reasons. Firstly, there is very little common ground with respect to the advice definition. A review of 42 studies showed that no common definition of advice-giving has emerged [21]. Secondly, the differences between the countries, their national pharmacy practices, and the applied data-collections methods used in the above studies were found to be too large to ignore. Finally, there was a wish to stay as close to Dutch pharmacy practice as possible. Consequently, it was decided to use practice as a basis for definitions. Based on the principle of induction

[43, 44] the studied pharmacists themselves defined the categories. Thereby deviating from the categories and definitions of the above studies. The pharmacists of pharmacy 1 made a proposal for the studied categories. These were refined by the other pharmacists until there was general agreement and finalized by the researcher. This was done on the condition that all categories would be mutually exclusive. Possible differences between the definitions between pharmacies were discussed and one definition was chosen. All pharmacists explained the definitions to their team. They trained their staff both during a discussion of progress and provided feedback at the workplace when necessary.

General work was defined as all the work done at the pharmacy. This definition comprised the sub categories care-related work and other work. Care-related work was defined as the work where at least parts of the work content did relate to pharmacotherapeutic consultation. For instance, a conversation on the medical therapy with the patient or medication surveillance during computer work or home delivery work. With the other work this was never the case. For instance, conversations with the patients about the weather only, keeping the accounts, or the refilling of stock. These two sub categories were again split up in 11 sub sub categories (Table 1).

Results

Table 2 shows that pharmacy 1, 2 and 3 were located in a rural, urban, and sub-urban area, respectively. The number of prescription items dispensed daily was with 501 highest at pharmacy 3. Pharmacies 1 and 2 were lower with 488 and 453 items, respectively. Pharmacy 1 had the highest number of 21 non-prescription customers per day;

Table 2 Main characteristics of the study pharmacies

Items	Cases		
	Pharmacy 1	Pharmacy 2	Pharmacy 3
Area	Rural	Urban	Sub-urban
Number of prescription items per day	488	453	501
Number of non-prescription customers per day	21	17.5	13.5
Total FTE per day	8.96	7.65	8.40
Pharmacists FTE per day	1.65	1.15	1.95
Assistants and remaining staff FTE per day	7.31	6.5	6.45
Mean number of prescription items per person per day	55	59	60
Opening hours	53	45	45

pharmacy 2 was on the intermediate level with 17 customers, and pharmacy 3 lowest with 13 customers per day. Pharmacy 1 had a relatively high staff complement of 8.9 staff members. Both pharmacies 2 and 3 did have a lower staff complement of 7.6 and of 8.4, respectively. Pharmacy 1 had 7.3 assistants and remaining pharmacy staff employed. It was the highest relative number, and the number of pharmacists was 1.6. Pharmacy 2 had the least number of pharmacists: 1.1 and the number of assistants and other staff was 6.5. Pharmacy 3 had relatively the least number of 6.4 assistants and other staff and the highest number of 1.9 pharmacists. A prescription work load index was created by dividing the number of prescription items dispensed by the staff complement. This index showed relatively high working pressures at pharmacies 2 and 3. At pharmacies 1, 2 and 3 these ratios were 55, 59, and 60, respectively. Pharmacy 1 had the longest opening hours. It had ten opening hours five days a week and three opening hours one day a week. Pharmacies 2 and 3 did have nine opening hours five days a week.

Table 3 combines the results per pharmacy with the total results for all three pharmacies. It presents the cumulative observed frequencies of the items over two weeks, the mean per day, the percentage per item as part of all observed frequencies, and the standard deviation of the mean over two weeks. The table shows that in 34% (3,178) of the observations the pharmacy work was care-related. A total of 66% (6,093) of the observations related to other work activities. Both counter work and computer work are 11% of the work at the pharmacy.

For the purpose of the analysis, at least part of this work has been considered to be care-related. For instance, counter work consists of 4% for 'care work' and 7% for 'other' counter work. For computer work similar lines of thought can be followed. This work comprises care-related activities, for instance, medication surveillance and medication counselling. But it also includes non care-related activities such as work that is due to the legal requirements for records of dispensing and quality control procedures. On one hand, the table shows consistency in the data set between the three pharmacies. For instance, 'counter other' (7–8%) and 'logistical work' (5–6%) while 'ex tempore preparation' (2–7%) and 'home delivery work' (1–8%) show the variation.

Discussion

The results support the idea that the facilitating organisational factors of Dutch pharmacy practice [15] translate into a substantial proportion of care-related work being performed. However, care-related work is not the principal activity in Dutch community pharmacies.

Table 3 General work in the pharmacy measured using MDWS

Cases	Pharmacy 1				Pharmacy 2				Pharmacy 3				Total				
	Measures	Σ	μ	%	σ	Σ	μ	%	σ	Σ	μ	%	σ	Σ	μ	%	σ
Items																	
Counter care	157	17.4	5	8.6	141	14.1	5	10.9	86	8.6	3	3.0	384	13.2	4	37.2	
Counter other	248	27.6	8	5.3	197	19.7	7	8.1	224	22.4	7	4.2	669	23.1	7	25.5	
Consultation room	13	1.4	0	1.8	1	0.1	0	0.3	8	0.8	0	1.0	22	0.7	0	6.0	
Telephone	151	16.8	5	5.3	166	16.6	6	6.1	82	8.2	2	1.4	399	13.8	4	44.8	
Computer work	260	28.9	8	7.7	289	28.9	11	10.6	437	43.7	13	9.6	986	34.0	11	94.9	
Ex tempore preparations	127	14.1	4	11.2	41	4.1	2	4.1	224	22.4	7	15.2	392	13.5	4	91.6	
Home delivery work	20	2.2	1	1.4	204	20.4	8	7.9	102	10.2	3	12.2	326	11.2	4	92.2	
Subtotal care related activities	976	108.4	30	12.6	1,039	103.9	39	10.4	1,163	116.3	35	26.9	3,178	109.6	34	95.1	
Filling work	837	93.0	26	20.1	590	59	22	21.7	900	90	27	22.8	2,327	80.2	25	163.8	
Logistical work	197	21.9	6	9.5	168	16.8	6	5.9	169	16.9	5	5.1	534	18.4	6	16.5	
Office work	133	14.8	4	8.5	55	5.5	2	3.2	180	18	5	8.6	368	12.7	4	63.1	
Other	1,137	126.3	35	42.8	813	81.3	31	22.4	914	91.4	27	25.1	2,864	98.7	31	165.8	
Subtotal other activities	2,304	256.0	70	61.3	1,626	162.6	61	46.0	2,163	216.3	65	36.4	6,093	210.1	66	357.8	
Total activities	3,280	364.4	100	68.8	2,665	266.5	100	43.4	3,326	332.6	100	52.6	9,271	319.7	100	369.1	

Three standards were used to compare the general work in the Netherlands with the international situation. Firstly, the overall results of the general work comprising 34% care-related activities and 66% other activities in this current study may be regarded as a positive result. The observed 34% of Dutch care-related activities is surprisingly close to the 33.1% of professional activities in Ireland [29]. Secondly, the 11% of the Dutch counter work is comparable with the British 10.6% of counter activities [30]. Finally, the 11% of computer work is relatively low in comparison with the reported 22% of time spent on writing and key boarding in the U.S. [25]. However, this comparison must be put into perspective because writing and key boarding is a wider definition than computer work. This may have led to higher frequencies in the U.S. Moreover, the inclusion of pharmacy assistants must have had a downward effect on the observed frequencies of computer work in the Dutch study. In the Netherlands pharmacists spent relatively more time behind the computer than assistants, due to their managerial work, quality control, and legal obligations.

Consequently, the general work at these three Dutch pharmacies was dominated by filling work, logistical work, office work, and other work. The results also support the view that the types of activities that make up pharmacy practice are very diverse. This not a very surprising observation [45]. Pharmacy work varies from the relatively simple refilling of stock and according paperwork, to working at the computer, dispensing the medicine, and high-tech medication counselling. All these tasks must be performed. A positive side effect of this task diversity is

that it allows pharmacists to use job rotation within the team. Thereby keeping the work interesting and positively influencing the team spirit by sharing the chores. Even though much of the pharmacy work is very often regarded as a sole precondition for the real thing: care-related work. However, this value should not be overestimated. The other activities remain an important facilitator of the quality of the professional work in health care. For instance, legal requirements for records of dispensing and quality control procedures create a great deal of Dutch computer work. These activities are a pre-requisite for the provision of care.

Whether all of these tasks should be performed by highly qualified staff is open to question. If it is assumed that Dutch community pharmacists limit their involvement in activities unrelated to pharmaceutical care and if basic dispensing is not regarded as part of pharmaceutical care [15], then the data should show that pharmaceutical-care related activities comprise the major part of their workload. But it did not. This is surprising because organisational and service factors in Dutch community pharmacy practice would appear to facilitate pharmaceutical care. For instance, concurrent and prospective medication analysis allows the pharmacy staff to discuss and solve detected drug-related problems in the computer with the patient and/or prescriber [15]. However, the potential of these opportunities is not being realized.

The study was not designed as a simple critique, but to encourage the design of better care practices. So given these potential qualities and their limited use: How can pharmacists improve this situation? An applied Dutch design principle is that an efficient pharmacy

organization creates time for pharmaceutical care. In this line of thought, the 66% of general work not being care-related, could be shifted to less pharmaceutically qualified staff members. For instance, with a robot for logistic tasks [46] the re-filling of stock can be safely done by unskilled labour forces. This is then supposed to decrease general staff expenses, to reduce lead times for prescription handling, and consequently creating time for care-related work [46–48]. Moreover, task specialization of pharmacy assistants in pharmacotherapeutic consultation and counter work may also improve their knowledge and skills. A situation which is present in the Netherlands, although to a limited extent. Dutch labour studies have shown that in terms of full-time equivalence (FTE) 20% of the pharmacy assistants are specialized in pharmaceutical care (a mean of 2 FTE out of a total of 10.1 FTE), and 0.9 FTE is lower skilled labour [49]. Whether this profile of pharmacy assistant specialisation persists may depend upon the utilization and impact of robots in the dispensary, which may become clearer with new studies and discussions. Other studies have suggested that the interior design may be important to facilitate privacy at the counter, and by doing so, care-related work at the counter because patient and staff feel at ease [50–52].

Limitations

This study has some limitations. Firstly, a non-random sample of three out of 1,695 Dutch community pharmacies [53] is too small to permit generalisations and to reflect the diversity of practice. Nevertheless, these pharmacies were very different as the proportion of counter work at each of the pharmacies illustrates. Secondly, the broad definition of care-related work could have overestimated that category. For example, the category ‘telephone’ consisted of all conversations and at least part of these could well have been administrative, logistical, and private matters. However, these differences and limitations do not reduce the descriptive value of this study.

Conclusion

Although care-related work forms a substantial component of professional practice in Dutch pharmacies, the extent of its contribution could be increased by pharmacists in order to facilitate pharmaceutical care. An efficient pharmacy organisation, including possibly robotization, task specialisation, and interior design may have untapped potential; to create space and time for care-related tasks. Systematic experiments could reveal if these types of modifications

could expand the proportion of care-related activities in pharmacies.

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