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Service Quality in Public and Private Pharmacies in the City of Kragujevac, FR Yugoslavia

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Aim. To compare the service quality in public and private pharmacies in the city of Kragujevac by measuring patient care and health facility indicators.

Methods. The patient care indicators and health facility indicators, established by the World Health Organization in 1995, were measured prospectively in 7 public and 7 private pharmacies in Kragujevac, Yugoslavia, during November and December 1999. A sample of 100 patient-visits was analyzed in each pharmacy.

Results. Our study showed that the average drug dispensing time ranged from 20.5 to 48.2 seconds, being significantly longer in private (21.1-48.2 s) than in public pharmacies (20.5-33.7 s) ($F=13.12$, $p<0.001$). The percentage of actually dispensed drugs ranged from 29% to 63%, and no significant difference was found between public and private pharmacies. Patients' knowledge of a correct dosage ranged from 30% to 74% and the availability of key drugs ranged from 67% to 93% with no significant difference between public and private pharmacies. There was serious negligence in labeling the dispensed drugs in both public and private pharmacies: not a single drug package was labeled according to the World Health Organization recommendations. Key drugs were highly available in both public and private pharmacies.

Conclusion. The average drug dispensing time was too short for a proper interaction between a pharmacist and a patient in both public and private pharmacies. The results of our study suggest that there was no real difference in the service quality between the public and the private pharmacies.

Key words: *health care evaluation mechanisms; medicine, state; pharmacy, drug utilization; primary health care; quality indicators, health care; prescriptions, drug; quality control*

The service quality of the primary care largely depends on the performance of pharmacies. The best way to investigate the quality of the service in pharmacies is to measure the indicators defined and validated by the World Health Organization (WHO,1,2). There are six basic drug use indicators relevant for pharmacies, sorted into two groups: patient care indicators (four) and facility indicators (two). Values of indicators are usually first measured in one point of time (cross-section), and then periodically, especially after an intervention aimed at correcting the actual practice (3). Such studies are especially useful for countries such as Yugoslavia, in which political, economic, and health systems are undergoing rapid change.

The National Health Service in Yugoslavia, which is run by the state, owns pharmacies through which drugs are dispensed in the primary health care. However, in 1991, the new law was issued allowing any physical person to open a private pharmacy within the primary health care sector, provided that the person had the appropriate facility and staff. Since then, private pharmacies, run by the hired pharmacists, have far outnumbered public pharmacies (e.g., around threefold in Kruševac municipality) (3). As the differences in the quality of service in public and private pharmacies have not been investigated, the aim of our study was the comparison between public and private primary care pharmacies in the city of Kragujevac. Such data could be used as a baseline for further follow-up of the quality of their work, as well as a useful source for planning necessary corrective measures in Yugoslavia and other east-European countries in socio-economic transition.

Material and Methods

Pharmacies

The values of drug use indicators were measured prospectively in 7 public and 7 private pharmacies operating in the city of Kragujevac during November and December 1999. The 7 investigated public pharmacies were the only public pharmacies in Kragujevac at the time of the study. The 7 private pharmacies were randomly chosen out of 26 private pharmacies in the city of Kragujevac by implementing random numbers tables; they comprised 27% of all private pharmacies in the city of Kragujevac.

Research Protocol

In each pharmacy, a sample of 100 patient-visits was surveyed on a randomly chosen census day in November or December 1999. Independently from the staff in the pharmacies, a group of 3 investigators collected the data in all 14 facilities and filled out Patient Care Forms, suggested by WHO (1). As a client approached the pharmacist, one of the investigators reviewed the client's prescriptions, and then recorded the number of dispensed drugs. The second investigator measured the time from the moment a client approached the pharmacist until he or she left the pharmacist's counter. The third investigator asked the clients on their way out to explain how they would take the dispensed drugs (route of administration, daily dose, total duration of therapy, before or after a meal). The third investigator also checked whether the dispensed drugs were labeled properly. After the data from 100 patient-visits were collected, the investigators checked the availability of key drugs and the copy of essential drugs list in the pharmacy.

Outcome Measures

Patient Care Indicators. (a) Average dispensing time = total time for dispensing drugs to series of clients/number of client encounters; (b) percentage of drugs actually dispensed = (number of drugs actually dispensed/total number of drugs prescribed) x 100; (c) percentage of drugs adequately labeled = (number of drugs adequately labeled/total number of drugs dispensed) x 100; (d) percentage of clients who could adequately report the dosage schedule for all drugs = (number of clients who could adequately report the dosage schedule for all drugs/total number of clients interviewed) x 100.

Health Facility Indicators. (a) Availability of key drugs = (number of specified drugs actually in stock / total number of drugs on the checklist) x 100. The Department of Pharmacology at the Medical Faculty in Kragujevac established the checklist of key drugs before the start of the study, which was limited to 15 products chosen according to their importance and frequency of use. The checklist included: epinephrine, hydrocortisone, aspirin, morphine, penicillin, diazepam, aminophylline, furosemide, insulin, diclofenac, captopril, aminoglycosides, digoxin, glyceryl trinitrate, and intravenous solutions (NaCl 0.9% or glucose 5%); (b) availability of the copy of essential drugs list or form at health facility: yes or no.

According to the WHO, dispensed drugs are adequately labeled if dose regimen, drug name, and client's name are clearly written on the drug package (1). To better evaluate the time that a pharmacist spends on explaining to a client how to properly use the prescribed drugs, we designed a new patient care indicator – average dispensing time per item calculated as total time for dispensing drugs to series of patients / number of drug packages dispensed.

Statistics

The differences between the public and private pharmacies were tested by two-way analysis of variance (for average dispensing time) and by non-parametric Mann-Whitney U test (for the rest of the indicators) (4). The level of significance was set at $p<0.05$.

Results

The average dispensing time in public pharmacies ranged from 20.5 to 33.7 s, and in private pharmacies from 21.1 to 48.2 s (Table 1). The average dispensing time per item ranged from 12 to 32.5 s in public pharmacies, and from 26.8 to 39.8 s in private pharmacies (Table 1). The average dispensing time and the average dispensing time per item in private pharmacies were significantly longer ($F=13.12$, $p<0.001$, and $F=15.6$, $p<0.001$, respectively).

The percent of actually dispensed drugs in public pharmacies ranged from 29% to 55%, and in private pharmacies from 35% to 63 % (Table 1); this difference was not significant ($U=20$, $p>0.05$).

The percentage of patients who could adequately report the dosage schedule for all the drugs they got in the

Table 1. Drug use indicators in public and private pharmacies studied in FR Yugoslavia in 1999

Pharmacies	Mean SD dispensing time (s)		No. (%) of		Availability of key drugs No. (%)
	per client	per item	actually dispensed drugs[a]	patients able to report the dosage schedule	
Public:					
1	33.7 31.6	23.9 22.3	89 (50)	36 (58)	10 (67)
2	28.3 23.1	20.7 26.1	110 (47)	38 (57)	11 (73)
3	25.9 24.5	32.5 26.0	96 (47)	35 (53)	12 (80)
4	21.2 15.6	12.0 15.4	147 (55)	50 (62)	12 (80)
5	33.2 25.0	23.8 22.1	119 (55)	39 (54)	12 (80)
6	20.5 23.6	23.1 19.3	65 (29)	41 (60)	11 (73)
7	31.2 24.4	17.7 16.6	107 (50)	25 (55)	11 (73)
Average	27.7 24.8	21.2 25.0	733 (48)[b]	264 (57)[b]	79 (75)[b]
Private:					
1	48.2 29.5	39.8 35.5	48 (35)	12 (33)	11 (73)
2	32.6 34.7	31.1 36.1	75 (53)	31 (51)	12 (80)
3	45.0 36.2	39.3 30.7	85 (63)	50 (74)	14 (93)
4	33.1 51.0	38.5 45.2	76 (55)	41 (70)	14 (93)
5	21.1 22.7	26.8 30.1	62 (45)	16 (30)	12 (80)
6	27.2 26.2	33.4 33.2	66 (48)	20 (37)	10 (67)
7	30.1 49.5	33.6 43.4	75 (53)	31 (50)	11 (73)
Average	33.9 38.0	32.6 43.2	487 (50)	201 (51)	84 (80)

[a]Of all prescribed drugs.
[b]Total.

public pharmacies ranged from 52% to 62%, and from 30% to74% in private pharmacies (Table 1); again, difference was not significant (U=14, p>0.05).

The availability of key drugs in public pharmacies ranged from 67% to 80%, and in private pharmacies from 67% to 93% (U=18.5, p>0.05; Table 1).

Labeling of drugs was inadequate in all cases of dispensed drugs: no drug was labeled properly. The main problem was omission of the patient's name on the drug package. Besides, the dose regimen was written on original drug package (without an underlying sticker) over printed letters, and as a rule, was unclear. For example, only "2x1" was written to indicate that the drug should be taken as 1 item twice a day.

In all of the investigated pharmacies a copy of essential drugs list (9th, 10th, or 11th edition, issued by the World Health Organization) was not available.

Discussion

Our study showed that the average dispensing time was statistically longer in private than in public pharmacies. This difference does not have a practical (clinical) significance, since not a single pharmacy had the average dispensing time shorter than 20 or longer than 50 seconds. This time is somewhat longer than in Nigerian pharmacies (12.5 s), but far shorter than in Nepal pharmacies (86.1 s) (5,6). We believe that this time is too short for establishing proper interaction between a patient and a pharmacist, because 30 seconds is far from enough to explain dosage regimen, adverse effects of a drug, all precautions, and to actually label and dispense a drug. Considering that a patient's compliance directly depends on his or her knowledge about the drug (3), we think that all pharmacists in both public and private pharmacies have to prolong the dispensing time as a necessary step towards the improvement of patient care.

The need for such measure is reflected in the poor labeling practice we observed in both public and private pharmacies. The WHO recommends that each drug label should contain the dose regimen, drug name, and patient's name (1). Our study showed that the names of the patients were not written on the labels at all, and the dose regimens were not written in all necessary details. Omission of the patient's name on drug labels has potentially serious consequences, such as drug misuse, drug abuse, and overdose.

Thirty to seventy four percent of the patients could adequately report the dosage schedule for all the drugs they received in the pharmacy; there were no differences between public and private pharmacies. These values were comparable with values recorded in the third world (6-8) and are unsatisfactory. Again it turns out that pharmacists should spend more time with their patients and improve their communicating skills and attitude in order to offer better information to the patients.

Percentage of drugs actually dispensed varied from pharmacy to pharmacy, but the variations were similar in both public and private pharmacies. This was rather surprising, since the private pharmacies had open access to all domestic drug producers and importers for supply, as well as their own capital for buying drugs. On the other hand, public pharmacies had limited funds for buying drugs, since they depended directly on the budget of the Ministry of Health. However, the small percentage of dispensed drugs, as observed in the study, also points to a lack of feed-back link between physicians and pharmacists in primary care in Serbia; there were neither established mechanisms nor legal obligations for pharmacists to ensure informing the physicians day-to day on availability of the drugs.

The characteristic we observed was the policy about priorities in drug supply. Availability of key drugs in pharmacies in Kragujevac (67-93%) was higher than in undeveloped countries (38-72%). Such a policy guaranteed a minimum of health care (9). Again, public and private pharmacies did not differ. However, none of the pharmacies had a copy of essential drugs list issued by the WHO, which points to a complete ignorance of pharmacists in regard to the worldwide concept of essential drugs. Such an attitude could adversely affect the values of availability of key drugs indicator in the near future, too.

The pharmacists who work in private pharmacies in Serbia are in much better position than their colleagues in public pharmacies. Their salaries are severalfold higher, and they are free to decide on what drugs they will sell in their pharmacies. The situation is similar in other Central and East European countries in socio-economic transition (10-12). Yet, their performance, as shown by the values of the indicators, was not significantly better. This leads us to the conclusion that the quality of work in public and private pharmacies is basically the same – not high enough. Rapid economical changes in transitional countries should be closely followed by the changes in the quality of services, especially health care service. An educational intervention is necessary in both public and private segments of Serbian primary care in order to increase the service quality (13,14).

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