Community pharmaceutical care: an 8-month critical review of two pharmacies in Kampala

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ABSTRACT

Background: The concept of pharmaceutical care is neither well developed nor adequately documented in Uganda. Objectives: This study is therefore an attempt to identify and quantify the various service components of community pharmacy practice in Kampala, Uganda's capital city.

Setting: Two pharmacies operating retail outlets were chosen out of about 110 in Kampala. The city itself is fairly small with a rather congested population. It is Uganda's economic hub with the greatest number of private sector health facilities and pharmacy outlets.

Methods: This study involved an 8-month observation period at the two pharmacies, combined with a data collection form to record demographic characteristics of respondents and parameters such as self-medication, pharmacy initiated therapy, prescription filling, patient/non-patient clients and treatment received.

Results: 567 observations were made. Missing data for parameters studied were omitted during analysis, thus yielding different totals for the various sets of variables. Just less than half of 564 respondents (44.3%), were females compared to males (55.7%). The study found that clients over the age of 12 years seeking pharmaceutical services were 8-fold (93.1%) more likely to be the very patients compared to children (OR = 8.3; 95% CI, 3.7-18.7). Slightly ove r thirty percent of respondents (32.3%) were *third party patients.* About fifteen percent (14.7%) of respondents came to fill prescriptions, 28.8% to receive pharmacy-initiated therapy and 56.5% came for self-medication with all drugs including antibiotics at 22.4%. Most clients (75.2%) received treatment. The availability of a drug at the pharmacy was found to be a significant predictor of whether treatment was received, with the client age acting as a confounding variable (OR = 59.7; 95% CI 25.9-137.6).

Keywords: Self-medication, prescriptions, healthcare, community, drug use, urban.

INTRODUCTION

Serious pharmaceutical care component of health in Uganda is only beginning to emerge after the institution of professional pharmacy training in the country in 1988. Currently, there are 201 pharmacists in the country with a population of about 25million[1]. Compared with the neighbouring countries, this is a very small pharmacist: population ratio.

Although specific service components of community pharmacy practice have not been adequately quantified in Uganda, anecdotal evidence suggests that this practice predominantly involves drug dispensing and supply of individual medications with less of the pharmaceutical care component. Many clients visiting a community pharmacy will therefore expect to fill a prescription

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or obtain over the counter (OTC) and pharmacy medicines albeit with some form of pharmaceutical care.

An evaluation of pharmaceutical sector studies in several developing countries[2] has shown that, while national efforts are mostly geared toward ensuring availability and access to drugs, appropriate use of drugs largely remains an issue of low priority. Effective strategies to improve the quality of service in Uganda's pharmaceutical sector cannot therefore be overemphasized. However, to ably undertake this, there is need to establish the pharmaceutical care seeking patterns in order to formulate effective and specific interventions. Over the counter sales of medicines has been reported widely[3,4,5,6]. In contrast, a study done in Malta[7] found that 31% of respondents who visited a pharmacy did so to purchase prescribed drugs while 23.3% went to a pharmacy to obtain Over-The-Counter products. A previous KAP study in Uganda revealed a large percentage of self- medication[8].

This study attempted to identify and quantify the various service components of community pharmacy practice in an urban area of Uganda. Characteristics of clients seeking these services, their disease and drug use patterns together with outcomes of pharmacy visits are factors that were considered in the study. These client factors together with those that relate to providers of pharmaceutical services impact on the quality of service. An examination of provider related factors was however

beyond the scope of this study. Outcomes of pharmacy visits were also evaluated for non-patient clients since the absence of direct pharmaceutical service provider-patient interactions is likely to have less favourable outcomes.

Study Design and Methods

A two-centre observational study was undertaken. The pharmacies were purposively selected out of the 110 registered retail pharmacies in Kampala because of their location in the suburbs of the city where it is expected that more pharmacy based care initiatives are offered. Following consent from the supervising pharmacist, trained research assistants made observations over a period of eight months from December 2001 to July 2002. Any drug possessing antibacterial, antifungal, antiviral or antiparasitic activity was classified as an antimicrobial agent. A cardiovascular drug was considered to have an effect on the heart or blood vessels with the exception of diuretics.

The setting

Kampala, the capital city of Uganda with a multi-ethnic population of more than 1.2 million. Kampala is also the country's economic hub with the greatest number of private sector health facilities and pharmacy outlets. At the time of this study, there were 201 registered pharmacies in Uganda, 110 of which were retail pharmacies in Kampala alone. Two private sector community pharmacies were included in the study, both of which were located at the periphery of Kampala where the communities included residents and daytime workers. They were owned in part by qualified pharmacists and partly by non-medical individuals. Both pharmacies registered more than 12 operational hours a day and remained open 7 days a week. Additionally, two other community pharmacies and at least one health facility providing clinical diagnostic service were available within a kilometer of each of the community pharmacies. Each of the pharmacies was also within a kilometer of a non governmental missionary based hospital that provided comprehensive curative care.

The two community pharmacies were however more than 5 kilometers apart. The pharmacist had the least observed pharmaceutical service provider-patient contact time per day, among the professional staff.

Subjects

This study involved 567 client observations at two community pharmacies. The clients were randomly selected as they walked into the pharmacies. The professional workforce in these two study centres consisted of a registered nurse (pharmacy assistant), an occasional pharmacy technician and a pharmacist inputting up to twenty person-hours per week at the least.

A data collection form was used to enter observations made for each client who was included in the study. Client variables considered included age taken as adult or child as indicated above, sex, and whether the client was the actual patient or a third party patient. Where there was doubt as to the age of the client, consent was sought to determine this parameter so as to make a correct classification. The outcome variables included; self-medication, pharmacy-initiated therapy, prescription filling and whether treatment was received or not received. Data was checked for accuracy and, disease category and drug classification accorded to each suspected illness and first medication involved respectively.

The data was then entered into Epi Info version 6.04 and imported for statistical analysis using the Epi Info version 2000 software package. Descriptive statistics were produced for demographic characteristics, pharmaceutical care seeking habits and outcomes of pharmacy visits. Mid-p values were used as measures for statistical significance. Uncorrected Odds Ratios (ORs) and the adjusted Mantel-Haenszel Odds Ratios for confounding variables were used to determine the association between two dichotomous variables. 95% Confidence Intervals (CIs) were determined separately for patient seeking habits, disease and drug use patterns, and expressed in percentage points.

RESULTS

Demographic characteristics

Of 564 clients visiting the two community pharmacy sites, 250 (44.3%, 95% CI, 40.2-48.5) were females and 314 (55.7%, 95% CI, 51.5-59.8) males. 524 (93.1%; 95% CI, 90.6-95.0) clients were adults and 39 (6.9%; 95% CI, 5.0-9.4) children under the age of 12 years. The number of clients seeking pharmaceutical services who were actual patients or required direct contact pharmaceutical care was 366 (67.7%; 95% CI, 63.5-71.5). In contrast, 175 (32.3%; 95%CI, 28.5-36.5) clients requiring a pharmaceutical service represented the actual patient or where third-party patients. 357 (71.1%; 95% CI, 66.9-75.0) adults and 8 children (22.9%; 95% CI, 10.4-40.1) seeking pharmaceutical services were actual patients. Adult clients seeking pharmaceutical services were therefore eight fold more likely to be the very patients compared to children (OR = 8.3; 95% CI 3.7-18.7). Tables 1 and 2 show demographic characteristics and disease patterns encountered in the two community pharmacies over the period.

Table 1: Data from the Pharmaceutical Society of Uganda (PSU)

Respondent	To fill Prescription Frequency %	Pharmacy Initiated Frequency (%)	Self Medication Frequency (%)
Age			
Adult (>12 years)	78 (96.3)	149 (94.3)	283 (91.3)
Child (<12 years)	3 (3.7)	9 (5.7)	27 (8.7)
Sex			
Female	33 (40.7)	79 (50)	130 (41.9)
Male	48 (59.3)	79 (50)	180 (58.1)
Client is Sick			
Yes	49 (61.3)	114 (74.5)	193 (64.8)
No	31 (38.8)	39 (25.5)	105 (35.2)

Totals differ because missing data for parameters studied were omitted during analysis.


Table 2. Disease patterns of Community Pharmacy patients

Disease Category	Frequency (95% CI) (n = 407)	%
Central Nervous System	16 (9.4-26.0)	3.9
Cardiovascular	21 (13.4-32.2)	5.2
Dermatological	23 (15.1-34.6)	5.7
Endocrine	15 (9.0-24.8)	3.7
Ear Nose and Throat	15 (9.0-24.8)	3.7
Gastrointestinal Tract	56 (43.1-71.6)	13.8
Genitourinary Tract	11 (5.7-19.9)	2.7
Infections and Parasitic diseases	78 (63.1-95.2)	19.2
Immunological	10 (5.3-18.7)	2.5
Musculoskeletal	49 (37.0-63.9)	12.0
Ophthalmologic	5 (2.0-12.2)	1.2
Peripheral Nervous System	1 (0.0-6.5)	0.2
Respiratory*	107 (89.9-125.8)	26.3

* 67 % of patients with respiratory illnesses had a cough and 24% had symptoms attributable to a cold; CI indicates confidence interval. The sum of percentages is not equal to 100 because of rounding up.

Pharmaceutical care seeking patterns

Eighty one of 552 (14.7%) patients visiting the community pharmacies did so to fill prescriptions, 159 to receive treatment recommended by the pharmaceutical care provider after presentation of complaints, while 312 patients made verbal requests for drugs or related products with the intention to self-medicate, as shown in figure 1.

Fig 1. Pharmaceutical care seeking pattern
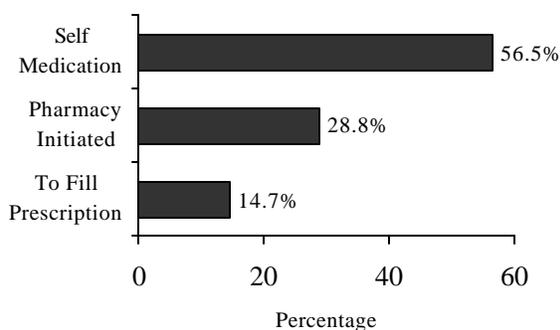
Pharmacy visits outcomes and drug use patterns

The average service level of the two community pharmacies in terms of their ability to meet patient drug needs was 91.7% (95% CI, 89.0-93.7). 422 (75.2%; 95% CI, 71.4-78.7) clients received treatment while 139 (24.8%; 95% CI, 21.3-28.6) did not because either medication was not available (44, 31.7%) or was too costly (92, 66.2%). One (0.7%) patient did not receive treatment for an unknown reason. Two (1.4%) patients were referred to another health service level for the reason that their condition could not be managed at the community pharmacy. Availability of a drug at the community pharmacy was found to be a significant predictor of whether treatment was received, controlling for age (OR = 59.7; $P < 0.0001$).

The study also found that 70 (22.4%) episodes of self-medication were with an antimicrobial, although none of these involved the treatment of a cold. 40 (50.0%; 95% CI, 38.6-61.4) clients seeking to fill prescriptions, 144 (90.6%; 95% CI, 84.9-94.6) requiring pharmacy-initiated therapy and 233 (75.6%; 95% CI, 70.5-80.3) who were self-medicating clients received some form of treatment. Clients visiting the pharmacy to fill a prescription were therefore least likely to obtain treatment. See Table 3 for outcomes of community pharmacy visits.

Antimicrobials were mainly used to treat infections together with parasitic diseases (52.7%), and respiratory illnesses (28.2%). Additionally, 37 (56.1%) occurrences of coughs were treated with antimicrobials. Apart from paracetamol (2.9%), amoxycillin (4.0%) and cotrimoxazole (2.9%) were the most commonly used drugs. 28 (6.5%) drugs dispensed were used for the treatment of malaria. The types of drugs used in the community pharmacies are shown in table 4.

Table 3. Outcomes of Community Pharmacy visits*

Variable	Treatment Received	Treatment Not received	Total	OR	95%CI	P†
Drug available						
Yes	418(81.6)	94(18.4)	512	59.7‡	25.9-137.6	**<.0001**
No	3(6.4)	44(93.6)	47			
Age						
Adult (>12 years)	386(74.4)	133(25.6)	519	0.4	0.2-1.1	.96
Child (<12 years)	33(86.8)	5(13.2)	38			
Sex						
Female	190(76.0)	60(24.0)	250	1.1	0.7-1.6	.33
Male	229(74.4)	79(25.6)	308			
Client is patient						
Yes	271(75.1)	90(24.9)	366	0.9	0.6-1.4	.65
No	134(76.6)	41(23.4)	175			

OR indicates odds ratio. Totals differ because missing data were omitted during analysis.

*Data are presented as number (percentage) unless otherwise denoted.

†P values in boldface are significant.

‡Adjusted for Age

Table 4. Types of drugs used in the Community Pharmacies

Drug Classificaton	Frequency (95%CI) (n=563)	%
Analgesic	91 (74.9-109.8)	16.2
Antiallergic	20 (12.4-31.0)	3.6
Anticonvulsant	7 (2.8-15.2)	1.2
Antidote*	3 (0.6-9.6)	0.5
Antimicrobial	178 (156.5-201)	31.6
Antiparkinsonian	1 (0.0-6.2)	0.2
Health Foods	5 (1.7-12.4)	0.9
Cardiovascular	35 (24.8-48.4)	6.2
Consumer Care Products	1 (0.0-6.2)	0.2
Dermatological	26 (17.5-38.3)	4.6
Diuretic	1 (0.0-6.2)	0.2
Electrolyte	1 (0.0-6.2)	0.2
Ear Nose and Throat	12 (6.8-21.4)	2.1
Gastrointestinal Tract	48 (36.0-63.1)	8.5
Haematological	2 (0.6-7.9)	0.4
Hormonal	21 (13.5-32.1)	3.7
Muscle Relaxant	1 (0.0-6.2)	0.2
Ophthalmologic	8 (3.9-16.3)	1.4
Psychotherapeutic	13 (7.3-22.5)	2.3
Respiratory	70 (55.7-87.3)	12.4
Surgical and Medical Supplies	1 (0.0-6.2)	0.2
Uterine (Ergometrine)	1 (0.0-6.2)	0.2
Vitamins and Minerals	17 (10.1-27.6)	3.0

Medicinal charcoal was the only antidote referred to in this mode of classification;
CI indicates confidence interval.

DISCUSSION

This study found that the majority of clients (56.5%) seeking community pharmaceutical service at the two pharmacies self medicate with not only over the counter (OTC) medicines but also other classified pharmacy and prescription drugs. About thirty percent (28.8%) also receives treatment initiated by a pharmaceutical service provider, while only 14.7% pharmaceutical service provider-client interactions involved the processing of prescriptions. These results mirror some other findings. A study done in Malta[7] found that 31% of respondents who visited a pharmacy did so to purchase prescribed drugs while 23.3% went to a pharmacy to obtain over-the-counter products. However, the Malta study established that significantly more females visited a pharmacy compared to males, as opposed to this study in urban Uganda, which found that slightly more males visited the community pharmacies to either have prescriptions filled or to obtain over the counter products. The number of both males and females seeking pharmacy-initiated treatment from the two community pharmacies was similar as shown in table 1. This disparity in pharmaceutical service seeking patterns clearly demonstrates the need for country-specific pharmaceutical sector interventions to maintain or improve drug use patterns amongst the public. Thus, as stressed by Okuonzi et al[9], strengthening of national capacity for policy analysis and research in Uganda is of paramount importance.

Though the antimicrobial use rates (31.6%) found in this study were comparable to those in a peri-urban drug survey of Mexico[10], and may be a true reflection of the infectious and parasitic disease burden, the 22.4% self-medication rate with these drugs is unacceptably high. Self-medication could be hazardous if drugs are used for the wrong reasons culminating in unnecessary adverse effects, emergence of drug resistance and wastage of meager resources. On the other hand, other workers have argued that self-medication could be an important component of primary health care[11]. Whichever way, it is a necessary requirement that self-prescribing individuals use the drugs involved in a rational manner.

The high rates of self-medication found in this and earlier studies and high rates of pharmacy-initiated therapy coupled with very low referral rates (1.4%) partly demonstrate that there could be high public expectations

of community pharmacies to offer a comprehensive range of health and pharmaceutical services. There is therefore a great demand placed on community pharmaceutical service providers from clients who cannot clearly discriminate between diagnostic and drug-dispensing services. Pharmaceutical care providers at the two community pharmacies therefore act as prescribers and advisers on use of medicines. This scenario is not surprising as estimates show that 79% of curative care in Uganda is provided by the private sector, compared with 21% by the public sector[12]. These observations underscore the significant role played by the private sector in healthcare delivery. Okello et al[13] also demonstrated that bed occupancy rates were low at peripheral health units in Uganda. This could partly offer an explanation for the high private sector rates of self-medication and pharmacy initiated therapy.

This situation is however further compounded by the fact that diagnostic and drug supply roles are not explicitly streamlined in the private health and pharmaceutical sector of Uganda. The difficulty in rationalising these roles and effectively regulating the private health and pharmaceutical sector have been underscored by Birungi et al[14] who indicate that, activities of informal health care providers otherwise considered unlawful are in fact a necessary service in the eyes of both providers and consumers

Additionally, the relatively high costs of health care and pharmaceutical products might deter some clients from seeking the most appropriate form of health or pharmaceutical service as demonstrated by a 66.2% failure rate to obtain medications because of prohibitive costs, even though 80% of drug used in Uganda[15] are cheaper generic dosage forms.

Implications

These findings show the need to explore benefits of pharmaceutical care interventions in community pharmacies of urban Uganda. Greater pharmacists' involvement in pharmaceutical care, and educational interventions for community pharmacy staffs could possibly improve drug use practices at community pharmacies in urban Uganda since the greatest majority of clients either self-medicate or seek pharmacy-initiated therapy. Elsewhere, Cordina et al[16] have observed the importance of considering such factors as pharmacists'

reimbursement, qualified support staff and amiable general practitioner-pharmacist co-operation among others, and the readiness of society[2] to accept expanded roles of the pharmacists in providing pharmaceutical care.

The human resource constraint in Uganda's health and pharmaceutical sector is another factor that needs to be examined before comprehensive pharmaceutical care packages can be implemented. This has been corroborated by a survey in government and non-government heath facilities in Uganda[17], which concluded that the number of qualified staff was grossly inadequate leaving most work in local facilities to be done by unqualified employees.

Perhaps more urgently though is the necessity for public drug use education to positively enhance these unfavorable public drug use indicators. The need to formulate interventions for appropriate antimicrobial use cannot be overemphasized. Indeed Homedes and Ugalde[2] underscored the justification for a global campaign to reduce inappropriate antibiotic use and promote their adequate administration. They stress further that all players in the pharmaceutical sector must be involved. The recent study by McNulty[18] also showed that individual level educational campaigns and patient leaflets provided by primary care givers could help in positively modifying patients' expectations about antibiotics.

In addition to the unfavourable drug use patterns, there was a relatively large number (32.3%) of non-patient clients-third party patients-seeking pharmaceutical services, in this study. This means that there is bound to be inadequate direct-to-patient counseling on medication use. The extent to which this negatively impacts on the quality of pharmaceutical care is however not known.

Limitations

The study had limitations in that, data collected did not explicitly stratify treatment received as complete or part-treatment or whether medication dispensed was a substitution by the pharmaceutical service provider. Part-treatment has a significant impact on outcome of especially infectious diseases and subsequent development of drug resistance, while the number of substitutions made for prescribed medications could be an indication of adequate prescription review by the pharmaceutical service provider.

In cases where a diagnosis was made for a particular disease, this depended on subjective assessment of the health or pharmaceutical care provider with no verification using internationally approved criteria. This study also deliberately did not extend to cover drug shops and dispensing clinics, neither did it make an evaluation of specific pharmaceutical care components at the community pharmacies. The study nevertheless established private sector community pharmaceutical care seeking

habits and demonstrated the largely unfavourable public drug patterns at the two pharmacies in Kampala.

Conclusion

In summary, there is a need for educational interventions targeting both the public and pharmaceutical service provider, and to explore expanded pharmaceutical care roles in Uganda's community pharmacy facilities. Diagnostic and drug supply roles in the health and pharmaceutical sector should be rationalised in the urban places where both of these services are sufficiently developed. The strengthening of referral systems from community pharmacies is also a necessity. Additionally, on going research should be undertaken to guide in formulating and evaluating the impact of evidence based interventions in the health and pharmaceutical sector.

Acknowledgements

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