STI management in Tanzanian private drugstores - practices and roles of drugsellers

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Key messages:

- Although most of the drugsellers stated there were no STI-related drugs in the store, a majority of the simulated clients received drugs, commonly antibiotics.
  - Most dispensed drugs were recommended in the Tanzanian guideline for syndromic management of urethral and vaginal discharge syndromes although complete syndromic management was rarely provided.
  - Dosage regimens were often wrong, advice seldom given and questions only occasionally asked.
- Drug use information was however almost always provided.
- In this resource-limited setting, drugsellers could provide effective and safe STI management especially to male patients if given appropriate tools to improve practice.

ABSTRACT

Objectives:

To describe the role and possible contribution of private drugstores in STI management in rural Tanzania.

Methods:

A cross-sectional study that included drugsellers in private drugstores in eight districts of Tanzania. Data collected through interviews with drugsellers and the simulated client method presenting a male and female STI case. “QATI” scores (Questions, Advice, Treatment and drug Information) were developed to describe overall STI management.

Results:

Although 74% of drug sellers stated that there were no STI-related drugs in the store, medications were dispensed in 78% of male and 63% of female simulated client visits. The clients were dispensed drugs recommended in the Tanzanian guidelines for syndromic management of urethral or vaginal discharge in 80% of male and 90% of female cases. Drugsellers dispensed antibiotics during 76% of male and 35% of female simulated client visits. Dosage regimens were often incorrect and complete syndromic management rarely provided. Most drugsellers agreed that it is within their professional role to give information on STI treatment (89%) and prevention (95%). Drug-use information was almost always provided. Advice was however seldom given and questions occasionally asked. Overall STI management was better for men than for women.

Conclusions:

The drugsellers, although aware of the prescription-only status of antibiotics, saw themselves as having a role in STI management and were ready to provide drugs. In this resource-limited setting, drugsellers could provide effective and safe STI management especially to male patients if given appropriate tools to improve practice. The consequences of this for official policy need to be discussed.

INTRODUCTION

Sexually transmitted infections (STI) are major public health concerns in low-income countries.

Prompt and correct treatment of STI is essential to manage acute presentation, to avoid sequelae and to limit the spread of disease.[1] In Tanzania, STI services based on the syndromic STI management approach have in theory been scaled up to cover all regions of the country. However, the health system suffers major shortcomings. There is an acute shortage of health care providers, especially in rural areas and public health care facilities often have drug stock-outs.[2-4] This leaves patients without regular access to care and studies from other low-income countries have shown that STI are often managed in pharmacies and drugstores.[5-11]

In rural Tanzania, the private drugstore (“Duka la dawa baridi” or “Part II store”) is licensed to sell over-the-counter drugs (OTC) and is often the only access for poor people to medicines. Registered pharmacies are few in number and located mainly in district headquarters.[4] Drugstores are visited for both minor ailments and serious disease. Antibiotics, in spite of their prescription-only status, have been shown to be sold in drugstores.[12-14] To our knowledge, no studies on management of STI in Tanzanian drugstores have been published in international scientific journals.

The Ministry of Health and Social Welfare (MoH&SW) states that although drugstores are of great importance for basic drug access for the rural population, there are major shortcomings such as sale of prescription-only medicines (POM) and low knowledge of drugsellers despite the requirement that they have relevant training and a permit from the Tanzania Food and Drugs Authority (TFDA). [12,14]

The present study aims to describe the role and possible contribution of private drugstores in STI management in rural Tanzania.

METHODS

This cross-sectional study is a part of a larger project on drugstore performance called the PEERCON (peer review and consumer rights) project. Four out of Tanzania's 26 regions were purposively selected based on geographical location. Out of these, eight districts were randomly selected, two from each region. Mkuranga and Rufiji (Coast region), Korogwe and Muheza (Tanga region), Mvomero and Kilosa (Morogoro region) and Mpwapa and Kongwa (Dodoma region). The population size of each district is around 250 000 inhabitants.

A census of drugstores was attempted and all drugstores that could be found in the eight districts were included if they were open at the time of the visit. Lists of registered drugstores were obtained from the respective Regional Administration Offices and District Medical Officers. If found, additional unregistered drugstores were included during data collection.

Data collection:

Data were collected in 2004. Two different methods were used; face-to-face interviews and the simulated client method (SCM), in order to assess reported as well as actual practice.[15] The data collection instruments were developed in English by the research team collectively and the interview guide was translated into Swahili. After pre-testing, some clarifying changes were made to the instruments.

Face-to-face interviews

Local research assistants, mainly pharmacy students, interviewed the drugseller present in the drugstore at the time of visit. An interview guide with closed and open ended questions was used. Spontaneous answers were sought and probing was not used for specific response alternatives. Questions relating to general dispensing practices, case management of STI and malaria, adverse

drug reactions, consumer rights and regulation were asked. In this paper, key results on stated dispensing and STI management practices are reported.

Simulated Client Method

Data were also collected by simulated clients (SC) presenting at the drugstore with different complaints.[15] STI case scenarios, accompanied by checklists enumerating what to be observed, were developed in English by members of the research team. The scenarios were; Woman with abnormal vaginal discharge and itching, hereafter called ‘SCM-female’. (see Box 1), and; Man with a urethral discharge, hereafter called ‘SCM-male’. (See Box 2.) The checklists collected information on the practice of the drugseller, e.g. specific questions asked, advice and drug information given and drugs sold, if any. Research assistants, mainly pharmacy and medicine students, were trained to perform the different scenarios in Swahili in a reproducible way. They were instructed to buy what was recommended by the drugseller and to fill out the checklist within 15 minutes out of sight of the drugstore. Most stores were visited by one male SC and one or two female SC. A small number of stores were visited by three or four different SC according to feasibility.

SCM-female

- *You are seeking care for vaginal discharge and pretending to be a patient.*
- *You go in to the drugstore and say that you have a problem and there is itching [Now you wait for the drugseller to respond]*
- *If the drugseller should ask you questions, you should respond as follows:*
  - Do you have a discharge? -Yes
  - Is it a lot? - Minor/Not much
  - Does it smell? -Yes, foul
  - What colour is the discharge? -White, cream or milky
  - What is the duration of the discharge? -About two weeks
  - When was the last time you had sexual intercourse? -Respond so that it is within last month
  - Are you pregnant? - No
  - Do you take oral contraceptives? -No
  - Have you taken drugs for this before? -No
- *If the drugseller asks you for a prescription you say you don't have one. If the drugseller asks you to get a prescription first; reply that you do not have money to pay for the visit to a health provider and ask that if the drugseller knows the problem, can't she / he give you some drugs?*

Box 1. The SCM-female scenario, instructions to the female SC.

SCM-male

- *You are seeking care for urethral discharge and pretending to be a patient.*
- *You go in to the drug shop and say that you have a problem, and there is a discharge from your private parts.*
[Now you wait for the drugseller to respond]
- *If the drugseller should ask you questions, you should respond as follows:*
  - Is the discharge copious or scanty? -Copious
  - How long have you had the discharge? -Since yesterday
  - What colour is the discharge? -Yellow
  - Is urinating painful? -Yes
  - Do you urinate more frequently? -Yes [if asked how frequent, say very frequent]
  - When was the last time you had sex? -5 days ago
  - Was it with your wife or someone else? -Say someone else
  - Do you have ulcers on the genitals? -No
  - Have you taken drugs for this before? -No
- *If the drugseller asks you for a prescription you say you don't have one. If the drugseller asks you to get a prescription first; reply that you do not have money to pay for the visit to a health provider and ask that if the drugseller knows the problem, can't she / he give you some drugs?*

Box 2. The SCM-male scenario, instructions to the male SC.

Data analysis

Unit of analysis for the interview data was drugseller, and for the SCM data each individual SCM visit. Descriptive statistics, χ^2 tests and odds ratios (OR) with 95% confidence intervals (CI) were calculated using SPSS 10.0 and Stata 8 softwares. Drugs were classified according to whether or not they were recommended in the 2001 MoH&SW syndromic STI management guideline for urethral discharge syndrome (UDS) or vaginal discharge syndrome (VDS).[16] The syndromic STI management approach has been developed by the WHO for health care facilities where a laboratory is not available. It is used for managing STI based on symptoms and signs, following a flowchart procedure.[17]

To get an overview of the STI management, a novel data presentation, hereafter called QATI scores (Questions, Advice, Treatment and drug Information), was developed. (For detailed information see text table 3). QATI scores build on an earlier method used for assessing STI management in pharmacies in Vietnam.[5]

All interviewees were asked for informed consent before participating. For SCM visits, individual informed consent could not be asked from the drugsellers. However, all results are presented so that identification of individual drugsellers or drugstores is not possible. Letters of permission were received from district authorities. Ethical approvals for the PEERCON project were received from Muhimbili University of Health and Allied Sciences, Tanzania Commission for Science and Technology No 2003-084-CC-2003-09 and Karolinska Institutet No 04-514/3.

RESULTS

Background data

Ninety-four drugstores were identified in the eight districts with a range of 9 – 16 per district. Eighty face-to-face interviews were performed and 75% of the respondents were men. Eighteen respondents (23%) reported to be the owner of the drugstore and six of these were men. Almost all (96%) reported they were trained health workers, mainly nurse assistants. None of the respondents was a pharmacist. Most respondents worked part time and the vast majority reported that the store had one full time and one part time employee.

For the SCM visits, the sex ratio was reversed as compared to the interviews. In 87 (81%) of the 107 SCM-male visits and in 125 (87%) of the 144 SCM-female visits, the drugseller was a woman. Approximately half of the stores visited did not have the name of the store clearly marked for the data collectors to note down.

Reported and actual practice

In the interviews, 74% of the drugsellers reported that there were no STI-related drugs in the store. However, in a majority of the SCM visits, drugs were dispensed; in 78% of SCM-male and in 63% of SCM-female visits. (See Table 1). In, 80% (SCM-male) and 90% (SCM-female) of these visits, the SC was dispensed drugs that were recommended in the MoH&SW guideline for syndromic

management of UDS or VDS. Some were also dispensed additional drugs that were not in the guideline. (See Table 2). Antibiotics were dispensed in 76% of all SCM-male and 35% of SCM-female visits. Antifungals were dispensed in 41% of SCM-female visits. In around half of all SCM visits, the drugseller requested a prescription. If the drugseller did not request a prescription, s/he was seven times more likely to sell antibiotics in the SCM-male visits than if s/he had requested a prescription and six times more likely in the SCM-female visits. (OR=7.18 (1.88- 39.96) and OR=5.89 (2.29- 16.92)).

Table 1. Overview of drug dispensing practices across the data collection methods.

<i>Reported and actual drugseller practice</i>	<i>Interviews (n=80) %</i>	<i>SCM-male visits (n=107) %</i>	<i>SCM-female visits (n=144) %</i>
Requested prescription	Not asked	58	37
Refers patient for prescription	46 [^]	66	42
Dispenses drugs	28 ^{..}	78	63
Antibiotics sold	23 [*]	76	35
Antifungals sold	0 [*]	0	41
Information given		(n=83 [^]) %	(n=91 [^]) %
Name of product	58	89	81
Strength of product	13	5	30
Dosage	94	-	-
Duration of treatment	46	88	64
Take with or without food	-	24	8
Interactions	-	4	1
Side effects	-	0	3
Expiry date	-	-	6
How to store product	-	11	9

[^]did not sell drugs because they advised the customer to seek care at a health care facility.

^{..}reported to have sold drugs to the last customer complaining of STI-related symptoms

^{*}reported they sold one or more antibiotics/antifungals to the last customer complaining of STI-related symptoms

[^]Only reported for the clients who were sold drugs

Table 2. Drugs that were reported to have been sold to the latest STI client (interviews) or that were sold during SCM visits.

<i>ATC codes</i>	<i>Active ingredient</i>	<i>In guideline*</i>	<i>Interviews</i> <i>n</i>	<i>SCM-male visits</i> <i>n</i>	<i>SCM-female visits</i> <i>n</i>
D01B A (antifungals for systemic use)	Griseofulvin	No	0	0	1
G01AA (antibiotics)	Nystatin	No	0	0	2
G01AF (imidazole derivatives)	Clotrimazol	Yes	0	0	58 [^]
	Ketokonazole	No	0	0	1
	Miconazole	No	0	0	1
J01A A (tetracyclines)	Doxycycline	Yes	18	40	23
	Tetracycline	No	1	0	0
J01C A (Penicillins with extended spectrum)	Ampicillin	No	1	0	0
	Amoxicillin	No	0	3	5
J01C E (Beta-lactamase sensitive penicillins)	Phenoxymethylpenicillin	No	0	2	0
	Benzathine benzylpenicillin	No	2	0	0
	Benzyl Penicillin + Procaine	No	2	0	0
	Penicillin				
	Penicillin inj (undefined)	No	1	0	0
J01E E (Combinations of sulfonamides and trimethoprim, incl. derivatives)	Sulfamethoxazole + Trimethoprim	No	9	13	13
J01F A (Macrolides)	Erythromycin	Yes	2	1	1
J01M A (Fluoroquinolones)	Ciprofloxacin	Yes	9	30	15
J01X D (Imidazole derivatives)	Metronidazole	Yes	2	12	16
J01X E (Nitrofurantoin derivatives)	Nitrofurantoin	No	0	1	1
J01X X (other antibacterials)	Spectinomycin	Yes	1	0	0
J04 A B (Drugs for treatment of tuberculosis)	Rifampicin	No	0	2	0
N02B E (Anilides)	Paracetamol	No	1	2	3
-	Vitamins	No	0	2	0

[^]pessaries and cream

*MoH&SW guideline for syndromic management of urethral discharge syndrome (UDS) and vaginal discharge syndrome (VDS).[16]

UDS:

1st visit: Doxycycline, 100mg orally, twice daily for 7 days + ciprofloxacin, 500mg orally, as a single dose.

2nd visit: Ceftriaxone, 250mg by intramuscular injection, as a single dose + doxycycline, 100mg orally, twice daily for 7 days + metronidazole 2g, orally in a single dose.

3rd visit: Spectinomycin, 2g by intramuscular injection, as a single dose.

VDS: (Non-curdlike discharge)

1st visit: Doxycycline, 100mg orally, twice daily for 7 days + ciprofloxacin, 500mg orally, as a single dose + metronidazole 2g, orally in a single dose.

During pregnancy or lactation: Erythromycin, 500mg orally, 4 times a day for 7 days + ceftriaxone, 250mg by intramuscular injection, as a single dose + (In pregnancy, first trimester), clotrimazole, 200mg intravaginally daily for 3 days.

2nd visit: Ceftriaxone 250mg by intramuscular injection, as a single dose + doxycycline, 100mg orally, twice daily for 7 days + metronidazole 400mg, orally, twice daily for 7 days

VDS: (Curdlike discharge)

1st visit: Clotrimazole, 100mg intravaginally, daily for 6 days

2nd visit: Clotrimazole, 100mg intravaginally, daily for 6 days + ceftriaxone, 250mg by intramuscular injection, as a single dose + doxycycline, 100mg orally, twice daily for 7 days + metronidazole 2g, orally in a single dose.

Drug-use information, mainly name of the product and duration of the treatment, was provided to almost all SC who were sold drugs. Female SC who were sold antibiotics were five times more likely to receive written information than the ones who were sold antifungals (OR= 4.88 (1.66-16.21)). A majority of drugsellers agreed that it is within their professional remit to give information on drugs in general (95%) and on STI treatment (89%) and prevention (95%).

In 31% of the SCM-male and 41% of the SCM-female visits, the drugseller asked none of the questions predefined on the SCM checklists. Male SC were more likely to be asked about when they last had sex than female SC. (OR= 5.15 (2.52-10.76)). Although adequate drugs were often sold, the dosage regimens recommended were seldom correct and the complete syndromic STI management drug combinations were rarely provided. Few of the SC were given any kind of advice from the drugseller. (See Table 3).

Table 3. Responses to selected questions and QATI scoring.

<i>QATI score</i>	<i>Management assessment indicators</i>			
		Interviews (n=80) %	SCM-male visits (n=107) %	SCM-female visits (n=144) %
	Questions asked by the drugseller			
1p	Asked about symptoms	61	-	-
	Asked:			
	-whether have a discharge	-	-	51
	-the colour of the discharge	-	22	26
	-quantity of discharge	-	25	15
	-if discharge is smelly	-	-	21
	-if painful urination	-	36	-
	-if urination frequent	-	11	-
	-if genital ulcers present	-	7	-
1p	-about duration of symptoms	11	37	37
1p	-about time of last sexual intercourse	15	34	11
1p	-about sexual partners	-	41	-
$\frac{1p}{\Sigma/4} \rightarrow Q$ score	-whether taken drugs for condition before	21	27	12
	Advice given by the drugseller			
1p	-to see health worker if symptoms persist	19	16	8
1p	-how to prevent STI /have safe sex	45	18	10
$\frac{1p}{\Sigma/3} \rightarrow A$ score	-notify / treat partner	31	28	12
	Treatment recommended/sold			
1p	Drug in guideline	39	62	57
1p	Correct dosage & duration (for drug in guideline)	9	26	31
$\frac{1p}{\Sigma/3} \rightarrow T$ score	Complete syndromic treatment UDS or VDS [*]	0	3	2
	Dispensed only drugs not in guideline	24	16	6
	Missing/no drug	37	22	37
	Type of drug use Information given		(n=83 [€])	(n=91 [€])
1p	Verbal information	99	%	%
$\frac{1p}{\Sigma/2} \rightarrow I$ score	Written information	96	96	91
			93	69

*Non-curdlike discharge

€Only reported for the clients who were sold drugs

Table text: The QATI score was based on drugseller knowledge or reported practice at latest STI client encounter (interviews), and actual drugseller practice at the SCM visits. For each respondent / SCM visit a score was calculated for the following: questions asked by the drugseller (Q), advice given by the drugseller (A), knowledge on treatment / treatment sold (T) and type of drug use information given (I).

Q= questions asked : Each respondent's / SCM visit's score is the sum of the number of reported questions that the drugseller asked divided by the total number of questions that could correctly be asked as monitored by the data collection instruments. The total number of questions that could be asked was four: symptoms; duration of symptoms; sexual behavior and previous drug use for the condition. For each SCM visit, one point was given if at least one out of the seven questions about symptoms was asked. For the SCM-male visits, one point was

given if at least one of the two questions on sexual behaviour was asked. Each respondent / SCM visit is therefore scored between zero and one, for example, a score of 0.5 corresponds to two questions (out of a total of four) having been asked.

A= advice given: Each respondent / SCM visit was given one point for each of the following pieces of advice they gave (interviews) or were given (SCM): to see a health worker; preventing STI and partner notification. Thus, a score of 0.3 corresponds to one piece of advice, out of a maximum of three pieces of advice, being given.

T= treatment choice: One point was assigned if the drug was in the guideline, another point if the dosage regimen was correct and a third point if complete syndromic treatment was named (interviews) or dispensed (SCM). A score of 0.3 corresponds to having named or being dispensed a drug represented in the guideline but with incorrect dosage regimen. The treatment assessment was based on drugs sold in the SCM visits and knowledge on treatment of genital discharge in the interviews (sex of patient not specified). T score 0.00 corresponds to no drug or drug not in guideline.

I=type of drug information given: Each respondent / SCM visit was given one point if they reported to give (interviews) or were given (SCM) either written or oral information, and two points if both written and oral information was given. Thus, A score of 0.5 corresponds to either written or oral information but not both. In the calculations of (I)-scores for SCM visits, only encounters in which drugs were sold were included.

QATI (Questions, Advice, Treatment and drug Information) score

Overall STI management was better in the male SCM visits than in both SCM-female visits and interviews. That is, the percentage of SCM-male visits receiving a score over 0.5 was always higher than either SCM-female or interviews or both. (See Figure 1).

Figure 1. Distribution of the QATI scores.

Text Figure 1:

The percentages of respondents and SCM visits obtaining different scores for Q, A, T, I are presented for each data collection instrument. One is the highest possible score. For comparison, QATI scores were dichotomized as low (score 0.5 or lower) and high (score over 0.5). Differences in distribution were tested for significance using χ^2 test.

Q: SCM-male visits have significantly higher percentage over score 0.5 compared to both interviews and SCM-female.

A: SCM-female visits have significantly lower percentage over score 0.5 compared to both interviews and SCM-male.

T: Interviews have significantly lower percentage over score 0.5 compared to both SCM-male and SCM-female.

I: SCM-female visits have significantly lower percentage over score 0.5 compared to both interviews and SCM-male.

DISCUSSION

To our knowledge, this is the first study from Tanzania focusing on STI management in drugstores. In a majority of the SCM visits, the client received drugs that were recommended in the guideline, although rarely in correct dosage regimens and combinations. Furthermore, in almost all visits, information on how to use the drugs was provided, and the drugsellers considered it to be within their professional remit to give treatment and prevention advice on STI. The recommended antibiotics are however prescription-only medicines and not permitted for sale in drugstores.[12] The drugsellers in our study seem to be aware of this since a majority state that there are no STI-related drugs in the store. Yet, in practice they face client demand and are likely to be driven both by a desire to make a profit and to help their clients in need.[18] Our findings illustrate the intricate balance between adhering to regulation and providing access to medicines. Increased enforcement of regulating POM might cut off the only source for poor people, with increased morbidity and mortality from otherwise treatable diseases as possible consequences.[14 ,19]

Inadequate STI management may have serious consequences beyond treatment failure such as infertility and development of antibiotic resistance.[20] Of the drugs dispensed in our study that were classified as ‘not in guideline’, some are indicated for STI other than the ones described by UDS or VDS. Some were earlier recommended for UDS or VDS in Tanzania but were replaced because of high antibiotic resistance, e.g. sulfamethoxazole + trimethoprim.[21] Few of the drugs dispensed were totally irrelevant for the case presented by the simulated client.

Our results indicate that in the Tanzanian setting, with a constrained public health care system due to factors such as high prevalence of infectious diseases including HIV/AIDS,

limited financial resources, lack of health care personnel and frequent drug stock-outs, there is a potential to give private drugstores a more formal role in STI management especially regarding UDS. To secure acceptable quality of practice, drugsellers must be acknowledged and given tools to address the identified shortcomings. At present, partly because of prevailing regulation, they have few possibilities to update their skills and the insight into their practice is limited. Training alone has been shown to be insufficient to improve professional practice, but multi-component interventions have successfully been used in private pharmacies and drugstores in different parts of the world.[22-24]

An increased role for pharmacists and drugsellers in STI management has also been suggested by others, and in Ghana licensed pharmacists are recognized as the preferred health care provider for STI patients.[8 ,10 ,25 ,26] In Tanzania, upgraded drugstores, so called ADDOs (accredited drug dispensing outlets), licensed to provide a selected range of POM and OTC, have been tried out through a programme that is anticipated to be scaled up in the whole country.[27 ,28] Based on our findings, we suggest that STI management should be considered for inclusion in this programme.

The female SC in our study were often sold antifungals only and received STI-related advice on fewer occasions than male SC in spite of the explicit attempt to present an STI case. That written information was given more often to male SC than female could also point to a gender bias. Diagnosis of female genital complaints is complicated and syndromic STI management has been shown to work better for men.[11 ,29] In drugstores, there should therefore primarily be an increased emphasis on advice provision and referral for women with these complaints.

For the management of male STI patients in drugstores, a randomized controlled trial to test the effectiveness of selling “STI syndromic management kits” is recommended to inform policy. These kits have been shown in other contexts to simplify and improve STI management for male patients and include pre-packed medicines, condoms and partner notification cards.[30]

Methodological considerations

A census of drugstores in the eight districts was attempted. Once in the field, it was evident that some of the registered stores had closed and some new ones had opened. Hence some stores might have been missed. Based on power calculations for evaluation of the PEERCON intervention, each store should be visited by five different SC presenting the same scenario. In many cases however, it proved unfeasible for more than one SC to visit the same store since the number of ordinary customers per day was lower than anticipated, and the period of data collection limited. Suddenly receiving five unknown customers with the same complaints could have made drugsellers suspicious. The implications for the present study were that possible variation between different simulated client actors could not be taken into account in the analyses.

In spite of formal requirements, the name of all drugstores could not easily be identified.[12] This imposed potential limitations to data analysis and clustering effect estimations, since data could not always be linked to a specific drugstore. If a clustering effect is present, i.e. if the individual observations cannot be seen as independent, the widths of the CIs for the ORs presented might have been underestimated. In future studies, drugstores could be identified by geographical coordinates obtained by global positioning system (GPS). This technology is presently also available in some mobile phone models.

The QATI scores were developed to allow for comparison between reported and actual practice in spite of the identification limitations. Reported practice is often better than actual.[5] In the present study, reported sale of STI-related drugs was lower, but the treatment mentioned was more incorrect than the treatment sold in the SCM visits. Overall, the reported STI management was not better than the actual according to the QATI analysis. Either the respondents were able to give a truthful report or the results might have been confounded by the way questions were asked or by recall bias. Most interviewees were employed only part time and one hypothesis is that the SCM visits might instead have captured the full time employee who might be more experienced. The same pattern was however also seen in a study of the sale of antibiotics in Zimbabwean pharmacies that used the same data collection methods.[31]

The attitude questions on the role of the drugsellers can potentially be seen as leading, i.e. yielding the perceived desirable answer. In that case, it is still interesting that the drugsellers give these answers regarding STI in spite of the fact that they are at present not expected to have a formal role in STI management.

The interviews and the SCM visits were not done in any specific time order but rather according to feasibility. This might have affected the results. However since the respondents of the interviews to a large extent not were the same as the drugsellers met by the simulated clients, we believe that this had only a minor impact on the results, especially since case management proved to be relatively poor.

Whether an SCM visit mimics an ordinary case is not definite. In a normal situation, the drugseller might be familiar with the customer and therefore behave differently.[31] This was addressed by carefully selecting and training the research assistants to fit into the

context and be taken for local, although unknown, customers. The ethics of performing SCM must be considered because informed consent is not sought from the individual drugseller. The method, however, attempts to study actual practice, something which is difficult through other methods but essential to develop context-appropriate interventions ultimately benefitting drugsellers and STI patients.[5]

Conclusion

The drugsellers, although aware of the prescription-only status of antibiotics, saw themselves as having a role in STI management and were ready to provide drugs. In this resource-limited setting, drugsellers could provide effective and safe STI management especially to male patients if given appropriate tools to improve practice. The consequences of this for official policy need to be discussed.

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Competing interests

None to declare

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Contributions by the authors

NV has contributed to project planning and design, data management and analysis. She has coordinated the preparation of the manuscript. PM and WK have contributed to project planning and design, field work including data collection and management. LK has contributed to project planning and design and been the Principal Investigator of the PEERCON project. SV has contributed to data management and analysis. GT and CSL have contributed to project planning, design and analysis. All authors have contributed to manuscript preparation.

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