Knowledge and perceptions of drug quality among drug sellers and consumers in Lao PDR

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In most developing countries, including the Lao People’s Democratic Republic (PDR), high prevalence of low quality drugs has been reported. The aim of this study was to explore knowledge and perceptions regarding drug quality among drug sellers and consumers, in Savannakhet province, Lao PDR. Quantitative and qualitative methods were used. Fifty-nine drug sellers and 278 exit customers were interviewed. Eight focus group discussions with drug sellers and community members were conducted.

There was inadequate scientific drug knowledge among drug sellers. Only a few customers were aware of the existence of low quality drugs. Only one drug seller knew what constitutes a good quality drug according to the given criteria, and only two drug sellers knew the correct temperature for drug storage. Forty-four per cent had correct knowledge on drug labelling and 73% could read the expiry date. Fifty-eight per cent stated that they bought some drugs from unauthorized sources. Both drug sellers and consumers also elaborated on a local definition of drug quality. They determined drug quality by its perceived efficacy in the sense that a drug is good if it takes the disease away. They also trusted the responsible authorities not to provide them with low quality drugs. A majority of the consumers (73%) did not worry about the quality of the drugs, their greatest problem being financial constraints. People living in urban districts had significantly more knowledge on aspects of drug quality than those living in rural and remote areas.

The limitations in scientific knowledge among drug sellers and the low awareness among consumers may contribute to the continued existence of low quality drugs. Government interventions through training of drug sellers and drug information for lay people are suggested.

Key words: Lao PDR, private pharmacies, drug quality, worries, trust, drug sellers, consumers

Introduction

Drug quality has become an issue of growing concern in developing countries (Shakoor et al. 1997; Taylor et al. 2001). It may lead to adverse clinical results both in terms of low efficacy and by inducing drug resistance or serious damage to patients’ health (Okuonghae et al. 1992; Ogoh 1994; Roy 1994; Hanif et al. 1995; Menkes 1997; Taylor et al. 2001).

The Lao People’s Democratic Republic (PDR) is one of the poorest countries in the world, with a GNP per capita of US$370 (National Statistics Centre 1997) and a low literacy rate of about 60% among adults. The average life expectancy at birth is 61 years for women and 57 for men, and, overall, health indicators are low (Ministry of Health 2000).

Following the new economic policy of the Lao government introduced in 1986 (Ivarsson et al. 1995), the number of private pharmacies increased dramatically within a period of a few years up to above 2000 outlets (Paphassarang et al. 1995), of which 95% were so called ‘class 3’ pharmacies, i.e. the licensee being neither a pharmacist nor an assistant pharmacist, but most often a nurse (Stenson et al. 2001a). The drug regulatory system was weak, including the capacity of government staff to enforce the drug regulations, resulting in an uncontrolled private market (Stenson et al. 1997).

Inappropriate distribution of medicines is widely recognized as a problem in developing countries (Trostle 1996). About 3000 pharmaceutical preparations are available on the Lao market (Stenson et al. 1997), but only 2000 have officially been registered at the Food and Drug Department (FDD). Although some 500 brand-name drugs have been banned in Laos (Ministry of Health 1994), some of these are still available in pharmacies. Private pharmacies are often the first place that people seek health treatment (Ministry of Health 2000), and where all types of drugs can be obtained without a prescription. It has been reported that 70% of mothers with sick children bypass health facilities, obtaining antibiotics without a prescription (Pongpradith et al. 1993), and that the services of private pharmacies are of poor quality, both in terms of poor dispensing practices (Stenson et al. 2001a) and poor drug quality (Stenson et al. 1998). As much as 46% of 366 drug samples in the latter study were found to be substandard. A recent study from Laos reported that 38% of sampling artemisinin was fake (Newton et al. 2001).
Standards for ‘quality’ of drugs, according to the World Health Organization (WHO 1997), require that a drug product is efficacious without too severe side effects, and that it contains the quantity of active ingredient(s) claimed on its label within the accepted limits of its specification. It is also required that the drug product maintains its appearance, potency and therapeutic ability until its claimed shelf-life expiry.

To what extent do health professionals (drug sellers) and lay people (consumers) in Lao PDR recognize these criteria for defining the ‘quality’ of drugs? And to what extent are people (lay people as well as health professionals) elaborating on a local definition of drug quality? In all societies these two definitions exist side by side and can sometimes be used by the same people at various occasions. Local or culture-specific constructions of drug quality are anchored in the ideology of a particular society, and relate to its views on health, illness and disease (Etkin 1988). Locally defined constructs of drug quality have not yet been investigated in Lao PDR. Awareness that drugs of poor quality actually exist can be one factor in improving the situation (Goel 1996). The aim of this study was to describe and explore both the ‘scientific’ knowledge and local perceptions regarding quality of drugs among drug sellers and consumers in a province of Lao PDR.

Materials and methods

Study population

Savannakhet province is one of the biggest provinces of Lao PDR, with a population of 672,000 in 1995. At the time of the study there were 14 districts and about 1600 villages in the province (National Statistics Centre 1999). Health services comprised one provincial hospital, 14 district hospitals and 21 private clinics. There were 214 private and 15 public pharmacies. Seven districts [six control districts from a previous, finalized, randomized trial (Stenson et al. 2001b) on private pharmacies in the province] and one new district, where there had been no intervention, were selected for this study. All 145 private pharmacies in these districts constituted the study population. As the specific purpose was to explore the knowledge and perceptions of drug sellers and consumers, it was decided to take the pharmacy samples from only the control districts of the previous study to avoid any bias related to the possibility that drug sellers’ knowledge might have improved as a result of the intervention.

Methods and the sample

The study was cross sectional, and was carried out by: (a) structured interviews with drug sellers and exit customers, and (b) focus group discussions (FGDs) with drug sellers and community members.

In this study ‘customers’ are defined as people who bought drugs at a pharmacy during the visit of the research team. ‘Community members’ are women and men living in selected villages. Both customers and community members are ‘consumers’ of drugs.

The pharmacies were categorized into three different geographical areas – urban, rural and remote – according to the distance from the provincial capital (Table 1). To assure representation of all districts, a random strategic procedure was used for sampling the pharmacies. In two districts (one rural and one remote) with less than 10 pharmacies, all were selected, and in the remaining five districts, 10 were randomly selected (Table 1). This procedure resulted in a sample of 63 pharmacies, with an intended under-representation of urban pharmacies, in favour of pharmacies in the rural and remote areas.

Data collection was conducted in July 1999. The research team was able to visit 59 (94%) out of the 63 pharmacies (29 urban, 15 rural and 15 remote pharmacy). Three could not be reached due to bad roads and one was closed due to financial problems. The structured questionnaires2 to drug sellers and exit customers, and the interview guide 2 for FGDs were developed and pre-tested in Vientiane province.

In each pharmacy, both drug sellers and customers were interviewed. The recruitment period in each pharmacy was chosen for a 2–3 hour period during opening hours (usually from 5–7 o’clock in the morning until 7–8 in the evening). For the majority of pharmacies, the chosen hour periods were not the same. The interview with each customer was conducted immediately after the interview with the drug seller had finished. Six pharmacies (5 urban, 1 rural) had no customers at all during the time of the study. Exit interviews were made

<table>
<thead>
<tr>
<th>Category</th>
<th>Name of district</th>
<th>Distance in travel (hours) from provincial capital</th>
<th>No. of private pharmacies</th>
<th>Selected pharmacies</th>
<th>Excluded pharmacies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Khanthabury</td>
<td>0</td>
<td>60</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Outhoumphone</td>
<td>1</td>
<td>28</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Xaybury</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>Songkhone</td>
<td>3</td>
<td>20</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Phalanexay</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Remote</td>
<td>Phine</td>
<td>4</td>
<td>14</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Thapangthong</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>145</td>
<td>63</td>
<td>4</td>
<td></td>
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</tbody>
</table>
Most of the questions to drug sellers and customers were open ended. The questions were read without mentioning any predetermined answers or using any other kind of probing. The drug sellers were asked about their business, and their knowledge and perceptions regarding drugs. For example, we asked the following questions: ‘What are the major problems in your business?’ ‘Do you know what a correct label is?’ ‘Do you know how to identify the expiry date?’ If the respondent replied ‘yes’ to the last question, we checked by asking the seller to read the expiry date from a randomly selected drug item. The drug sellers were also asked to specify what a good quality drug is, about which drugs should be kept in the refrigerator and at what temperature. They were further asked about what they thought of the quality of the drugs they sold, and finally if they had any concerns about drug quality in general. The customers were asked about what drug(s) they had bought and for whom, and whether they had ever used them before. They were also asked whether they had received any information about the drug from the drug seller, what they thought about drugs from different origins (Laos, Thailand etc.), whether they had any worries about drugs, and finally whether they knew that drugs sometimes are too low in their quantity of the active ingredient.

Six FGDs were conducted with community members in three districts representing urban, rural and remote areas. Two FGDs were held in a selected village in each of the three districts (one for men and one for women), with 7–12 participants (aged 30–50 years). The participants were selected from a list of all families in the village. Each participant was invited and visited by the research team one day in advance to explain the general purpose of the FGD. The selection criterion was that he/she should be able to make decisions in the family. The groups were relatively homogenous with respect to socio-economic status. Two FGDs were held with drug sellers (mixed women and men) in one urban and one remote district. The groups comprised drug sellers who were owners or licensees of a pharmacy. Five drug sellers in the remote district and another 10 randomly selected drug sellers in the urban district were invited 2–3 days in advance and informed about the FGD.

The FGDs with drug sellers and community members, respectively, were conducted to explore both their knowledge and perceptions on drug quality. During the FGDs with drug sellers the participants were asked to comment on the scientific criteria used to define a good quality drug, such as label, expiry date, lot number and active ingredients. They were also asked to discuss ‘What is a good drug for you?’, and similar questions in order to explore their general views on drug quality. The FGDs with community members contained similar questions around the scientific criteria, but also questions like ‘What do you do when somebody in your family becomes sick?’ and ‘What do you know about drugs?’.

Each FGD was conducted by the first author (pharmacist), who had been trained as a moderator. Each session lasted about 1.5–2 hours. The venues for the discussions were carefully chosen in an effort to obtain a relaxed and open atmosphere. In the rural and remote settings a place at the temple or a schoolyard was used, while in the urban setting the village conference room was used.

The research team consisted of the first author and two other pharmacists from the FDD of the Ministry of Health in Vientiane, plus one pharmacist and one assistant pharmacist from the Savannakhet Food and Drug Unit (FDU). To minimize the inherent risk of bias due to the fact that the study team were government employees, the position and title of each team member remained unknown to the drug sellers and consumers as they introduced themselves as ‘researchers’.

In this study the knowledge among drug sellers of a good quality drug was assessed according to the following four criteria: (1) having a correct label, (2) registered at the Food and Drug Department, (3) being tested and having passed the standard for quality by the Food and Drug Quality Control Centre, and (4) containing the right amount of active ingredients as mentioned on the label, within the accepted standard limits. A correct drug label is a label that includes: name and strength of the drug, lot number, expiry date, instructions for use, and the manufacturer’s address. These criteria were developed based on the FDD policy (Ministry of Health 1995) and a World Health Organization document (WHO 1997). Each of the four criteria was given the same weight in assessing knowledge.

Epi-Info (version 6.04) was used for data entry of the structured interviews. The data file was then transferred to SPSS (version 10.0) for analysis. Before analysis, the data were coded and checked by the first author and the research team for accuracy and completeness. To account for the different probabilities of selection of pharmacies in each district, as well as the clustering of individuals by pharmacy and the varying number of responses at each pharmacy a two-stage weighting scheme and analysis at the pharmacy level was performed (Bland 1998). By using the pharmacy level as opposed to the individual level, it was not necessary to adjust for clustering effects.

For the customer data, the means for each pharmacy were calculated, and these means were aggregated to district means in the first stage. The weight is the number of respondents at each pharmacy. In the second stage, a weighted mean and weighted variance were calculated at the category level of urban, rural and remote by aggregating district means. The weight is the reciprocal of the sampling probability of the pharmacies in each district. The variance was adjusted with a Finite Population Correction (FPC) factor. These means were then tested for homogeneity using a standard t-test. For the drug seller data, we only need to employ the second stage weighting scheme and FPC correction since there is only one drug seller per pharmacy.

Confidence intervals (CI) at the 95% level were used to compare knowledge and perceptions of drug sellers and customers from urban, rural and remote areas. Statistical significance refers to confidence intervals that do not overlap.
All proportions shown in the tables are weighted. The relation between drug sellers’ sex and their knowledge was assessed through a chi-square analysis.

All FGDs were tape-recorded and thereafter transcribed and translated into English by the moderator and the note-taker. The transcriptions and translations were double-checked by the first author. The analysis was mainly conducted by the first and second author (social anthropologist), but each transcript was also read by the two other authors (medical doctors). No predetermined categories were used. The data were organized by using two approaches for qualitative data analysis: (a) an inventory of points discussed, and (b) margin coding (Bertrand et al. 1992). The data were thus transformed into categories related to the topics that were discussed, and coded on paper individually in order to identify themes and patterns.

The study was approved by the ethical committee at Karolinska Institutet in Sweden, and the Ministry of Health in Lao PDR. All drug regulatory authorities at central (FDD), provincial and district level (FDU of Savannakhet province) were informed about the whole study programme. Informed consent was obtained from the drug sellers, exit customers and community members.

Results

The results from both the interviews and FGDs with the drug sellers and consumers are presented in two sections on background characteristics, and scientific knowledge and local perceptions of drug quality. The two themes, trust in relation to drug quality and cost of drugs and affordability, that emerged from the FGDs, are presented in separate sections.

Background characteristics

Drug sellers

Of the interviewed 59 drug sellers, 26 were men and 33 were women. More than half (31) were both owners and licensees, while the remainder (28) were either licensees or owners. Eighty-two per cent of all drug sellers said that they were permanently present at the pharmacy. There was no qualified pharmacist, three had low level pharmacist training and the remaining 56 had medical background training with a predominance of nurses. Fifteen pharmacy owners participated in the two FGDs, 8 men and 7 women. Most of them were medical professional staff.

Consumers

There was an equal number of men and women among the 278 customers interviewed when leaving pharmacies, with an average number of five customers per pharmacy in each urban, rural and remote area, and with a median number of four (range 1–10). Their age varied from 5 to 70 with a median age of 30 years. The customers bought drugs for themselves (30%), but also for the family (50%), and their neighbours or someone else (20%). The total number of FGD participants was 62, 34 women and 28 men coming from urban, rural and remote areas.

Scientific knowledge and local perceptions of drug quality

Drug sellers

In the structured interviews, only one drug seller in the urban area had fully correct knowledge about what constitutes a good quality drug according to the four given criteria (Table 2). About half (48% overall) of the drug sellers in the urban (51%), rural (53%) and remote (39%) areas knew at least two out of the four criteria (Table 2). Almost half of the drug sellers (43% overall; urban 51%, rural 33%, remote 46%) knew what a correct drug label is, while about three-quarters (75%; urban 78%, rural 80%, remote 66%) knew how to read the expiry date of drugs, and almost two-thirds (63%; urban 56%, rural and remote 67%) knew that sometimes drugs could contain lower amounts of active ingredients than indicated on the label. In contrast, approximately three-quarters (75%; urban 78%, rural 80%, remote 66%) knew how to read the expiry date of drugs, and almost two-thirds (63%; urban 56%, rural and remote 67%) knew that sometimes drugs could contain lower amounts of active ingredients than indicated on the label. In contrast, approximately three-quarters (75%; urban 78%, rural 80%, remote 66%) knew how to read the expiry date of drugs, and almost two-thirds (63%; urban 56%, rural and remote 67%) knew that sometimes drugs could contain lower amounts of active ingredients than indicated on the label. In contrast, approximately three-quarters (75%; urban 78%, rural 80%, remote 66%) knew how to read the expiry date of drugs, and almost two-thirds (63%; urban 56%, rural and remote 67%) knew that sometimes drugs could contain lower amounts of active ingredients than indicated on the label.

The knowledge about the correct storage temperature of some special medicines was extremely low (Table 2), but more than

Table 2. Knowledge and perceptions of the quality of drugs among 59 drug sellers in urban, rural and remote areas in Savannakhet province, Lao PDR (all proportions are weighted for sampling probability of pharmacy)

<table>
<thead>
<tr>
<th>Description</th>
<th>Average proportion of drug sellers [CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban (n = 29)</td>
</tr>
<tr>
<td>Knowledge of a good quality drug based on four criteria:</td>
<td></td>
</tr>
<tr>
<td>Knew 3–4 out of the 4 criteria</td>
<td>0.06 [0.00–0.18]</td>
</tr>
<tr>
<td>Knew 2 out of the 4 criteria</td>
<td>0.51 [0.47–0.55]</td>
</tr>
<tr>
<td>Knew 0–1 out of the 4 criteria</td>
<td>0.43 [0.33–0.54]</td>
</tr>
<tr>
<td>Knowledge of correct temperature</td>
<td>0.06 [0.00–0.27]</td>
</tr>
<tr>
<td>Knowledge of correct label</td>
<td>0.51 [0.33–0.69]</td>
</tr>
<tr>
<td>Knowledge of correct expiry date</td>
<td>0.78 [0.60–0.95]</td>
</tr>
<tr>
<td>Perception that:</td>
<td></td>
</tr>
<tr>
<td>All drugs are of good quality</td>
<td>0.85 [0.67–1.00]</td>
</tr>
<tr>
<td>Drugs can contain lower amount of active ingredient than indicated</td>
<td>0.56 [0.42–0.70]</td>
</tr>
</tbody>
</table>
half of the drug sellers (54%; urban 55%, rural 60%, remote 47%) were aware that drugs had to be stored in a special way (Table 3). The awareness of the existence of substandard drugs was rather low (37%; urban 43%, rural 47%, remote 20%), and only a few drug sellers reported that low quality drugs or illegal drugs were major problems (Table 3).

Thirty per cent of the drug sellers (urban 23%, rural 27%, remote 40%) said that they did not have enough knowledge and needed more on-going in-service training programmes in order to do a better job (Table 3). Almost all (96%) said that they bought drugs from the authorized sources such as licensed pharmaceutical companies and factories. In addition, 58% of drug sellers stated that they usually also bought drugs from non-authorized sources, such as retail pharmacies and traffickers.

There was no statistically significant relation between the drug sellers’ knowledge of drug quality and their sex or location of the pharmacies, with one exception; drug sellers in the remote areas had less awareness about substandard drugs.

According to the FGDs, many drug sellers reported that whether a drug is of good quality or not depends on many factors, such as its shelf life, its prescription, its labelling and its cost:

“Patients will recover from disease if they use the drugs with valid shelf life and correct prescription from the doctor.” (male drug seller, urban area)

In particular, many drug sellers in both areas reported that labelling was one important aspect indicating drug quality. They said that without labelling the drug might be of low quality since it came from an unknown source:

“The label of the drug is very important for us, from which we can look at the expiry date, the indication and other information. If there is no label, we should not buy them. Nowadays, there are many illegal drugs, some of them lack labels.” (female drug seller, urban area)

However, some drug sellers said that they bought unlabelled drugs and put them in an old container with a label.

Almost all drug sellers also defined drugs according to their perceived efficacy. In the interviews, most drug sellers (79%) reported that they thought that all drugs they sold were of good quality (Table 2). During the FGDs, it became clear that the efficacy of drugs was mainly assessed in relation to whether the patients were cured and had recovered from the disease according to their own judgement. People were reported to always come back to buy the same type of drug again if it had cured the disease, or otherwise buy another if the drug had no effect:

“A good quality drug is first a drug with a label, lot number and expiry date, but the important thing is the judgement by consumers. When they buy drugs and recover from illness, they come back and buy the same drugs next time. This means that the drugs are of good quality.” (female drug seller, urban area)

The same kind of reasoning was found in both urban and remote areas. As can be exemplified by one male drug seller in the remote area: “The drug is good when it can treat the human diseases with a good result, but if it cannot, I will say that it is not of good quality.”

Moreover, according to the drug sellers in the urban district, a good quality drug is likely to be an expensive drug manufactured by a well-known company. They often advised their customers to avoid drugs of lower price, which they considered might be of low quality.

During the FGDs, drug sellers from both the remote and urban areas said that they were quite aware that low quality drugs exist and that this could have a bad effect on people’s health, and that it could affect their reputation:

“I am concerned about drugs without quality, I am worried about consumers and people’s health. So I don’t sell these drugs. The ones who use low quality drugs, first they lose money, second if their body can’t accept, there

<table>
<thead>
<tr>
<th>Description</th>
<th>Average proportion of drug sellers [CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major problems:</strong></td>
<td></td>
</tr>
<tr>
<td>Economic problems</td>
<td>0.52 [0.40–0.64]</td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td>0.23 [0.13–0.34]</td>
</tr>
<tr>
<td>Illegal drugs</td>
<td>0.13 [0.00–0.35]</td>
</tr>
<tr>
<td>No security in quality</td>
<td>0.06 [0.00–0.18]</td>
</tr>
<tr>
<td><strong>Awareness about:</strong></td>
<td></td>
</tr>
<tr>
<td>The storage of drugs</td>
<td>0.55 [0.40–0.69]</td>
</tr>
<tr>
<td>Substandard drugs</td>
<td>0.43 [0.23–0.62]</td>
</tr>
<tr>
<td>Poor manufacturing practices</td>
<td>0.03 [0.00–0.28]</td>
</tr>
<tr>
<td>The labelling of drugs</td>
<td>0.18 [0.03–0.33]</td>
</tr>
<tr>
<td><strong>Urban (n = 29)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.60 [0.60–0.60]</td>
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<tr>
<td></td>
<td>0.27 [0.14–0.40]</td>
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<tr>
<td></td>
<td>0.33 [0.20–0.46]</td>
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<tr>
<td></td>
<td>0.07 [0.00–0.20]</td>
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<tr>
<td><strong>Rural (n = 15)</strong></td>
<td></td>
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<tr>
<td></td>
<td>0.33 [0.60–0.60]</td>
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<tr>
<td></td>
<td>0.40 [0.25–0.55]</td>
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<tr>
<td></td>
<td>0.07 [0.00–0.22]</td>
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<tr>
<td></td>
<td>0.13 [0.00–0.43]</td>
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<tr>
<td><strong>Remote (n = 15)</strong></td>
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<tr>
<td></td>
<td>0.47 [0.39–0.54]</td>
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<tr>
<td></td>
<td>0.20 [0.12–0.28]</td>
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<tr>
<td></td>
<td>0.26 [0.04–0.49]</td>
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<tr>
<td></td>
<td>0.00 [0.00–0.00]</td>
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</tbody>
</table>
will be toxic effects. We also will lose our reputation.”
(male drug seller, urban area)

Consumers

More than half (62%) of the customers from the interviews in the urban (64%), rural (59%) and remote (62%) areas said that all drugs were of good quality (Table 4), but much fewer (41%) perceived that they could buy good quality drugs at private pharmacies (urban 36%, rural 48%, remote 37%) When asked about whether drugs can contain lower amounts of active ingredients than indicated on the label, 80% of the customers in the urban area and almost all customers (96%) in the other areas, said that they had never heard of this (Table 4). About one-quarter (27%; urban 29%, rural 27%, remote 24%) of customers said that they worried about the quality of drugs (Table 4).

The issue of whether labelling of drugs was important or not was raised during the FGDs. Participants in all groups reported that when they bought drugs at a pharmacy, there were usually labels on bottles for syrups and injections, but very seldom on tablets as they were often taken out of big containers and put in plastic bags. Furthermore, labels were often in a foreign language, and even if the label was available in Lao, there were only some people in the rural and remote areas who could read:

“We don’t care if it is with or without a label as long as it is a drug we take it. We don’t know anything – if it is a poison it will not be sold to us.” (male customer, remote area)

Exceptions to this view were voiced by both women and men in the two urban groups. These groups discussed almost all scientific criteria of a good quality drug, such as the imports of labels, expiry dates, indications on use, the sources of drugs and compliance to the international standard. This corresponds with data from the interviews, which showed that people living in the urban areas more often knew that drugs sometimes can contain lower amounts of active ingredient than did people living in the rural (20% [CI 0.70;0.89] vs. 3% [CI 0.81;1.0]) and remote (20% [CI 0.70;0.89] vs. 5% [CI 0.91;1.00]) areas (Table 4). There was no difference between male and female customers.

During the FGDs, many participants also elaborated on a local definition of drug quality in the sense that they perceived that all drugs are of good quality if they can treat a disease effectively. They used different words to describe this such as “feeling better”, “take the disease away”, “disease disappears” and “recover from disease”: “All drugs are of good quality if after taking them the symptom goes away” (rural woman).

Many participants in all FGDs said that they knew nothing about drugs, they just took them. They had never heard about fake or substandard drugs. As expressed by a man from the remote area, using the wording of a well-known Laotian proverb: “I don’t know anything about fake or substandard drugs. It’s like playing a flute for a buffalo.”

One man from the rural area defined a good quality drug in terms of its colour: “I think that a tablet is of good quality when it has its original colour”. He indicated that some drugs change colour when they get old and then they are not of good quality any longer. But, whether a person would recover from a disease or not was also reported to be related to the “blood and air in a persons’ body”. Several participants argued that people will react differently to the same medicine depending upon what type of “blood and air” they have in their body. It was therefore difficult to assess the quality of a drug, since one person would feel well after taking a certain medicine while another person would still feel ill, all depending upon each and every persons “blood and air in the body”.

Furthermore, women and men in the urban groups perceived that expensive drugs were good quality drugs, and that cheap drugs seemed to be bad quality drugs, as expressed by an urban man:

“Nowadays, everything in the market possesses two kinds of quality with different prices, the real and expensive one, and the imitative and cheap one. When we take the more expensive drugs just for a while, then we’ll feel better. That’s the good quality drugs.”

Table 4. Perceptions and worries about the quality of drugs among 278 customers in 59 pharmacies in urban, rural and remote areas in Savannakhet province, Lao PDR (proportions are weighted for number of customers per pharmacy and sampling probability of pharmacy)

<table>
<thead>
<tr>
<th>Description</th>
<th>Urban (n = 24)</th>
<th>Rural (n = 14)</th>
<th>Remote (n = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception that all drugs are of good quality</td>
<td>0.64 [0.51–0.78]</td>
<td>0.59 [0.21–0.96]</td>
<td>0.62 [0.36–0.87]</td>
</tr>
<tr>
<td>Perception that they can buy drugs of good quality at private pharmacies</td>
<td>0.36 [0.21–0.51]</td>
<td>0.48 [0.27–0.69]</td>
<td>0.37 [0.08–0.66]</td>
</tr>
<tr>
<td>Never heard that drugs can contain lower amount of active ingredient than allowed</td>
<td>0.80 [0.70–0.89]</td>
<td>0.97 [0.81–1.00]</td>
<td>0.95 [0.91–1.00]</td>
</tr>
<tr>
<td>Worry about drug quality</td>
<td>0.29 [0.15–0.43]</td>
<td>0.27 [0.07–0.48]</td>
<td>0.24 [0.00–0.57]</td>
</tr>
</tbody>
</table>

a Five pharmacies in the urban area had no customer.
b One pharmacy in the rural area had no customer.
Trust in relation to drug quality

Drug sellers

The drug sellers in the urban FGD said that they believed that drugs from licensed companies were always of good quality. They reported that they trusted the drug regulatory authorities, including inspections of imported and manufactured drugs, to control and monitor the quality of drugs:

“A good quality drug is a drug that we buy from a company controlled by drug authorities, with full label so that we know its expiry date. We should not buy from everywhere.” (female drug seller, urban area)

The drug sellers in the remote group did not express their view either about the quality of drugs in relation to their source or trust in drug authorities.

Consumers

In the FGDs, aspects related to the theme of ‘trust’ were brought up by both women and men in all areas. They said that all drugs were of good quality, and they did not worry about the quality, the expiry date or drugs with or without a label. They often said that they trusted pharmacy services, drug companies, physicians and drug regulatory authorities to provide them only with good quality drugs. They reported that they themselves did not have to be worried about the quality of drugs:

“We trust doctors and pharmacists that they will give us the right drugs.” (rural woman)

“I do not worry about drugs because everything is up to the doctors and government who have to monitor and control drugs. And if drugs are bad, the drug sellers will not dispense them.” (rural man)

Similar views were brought up in the FGDs in the remote area. “All drugs in the pharmacy are good otherwise they will not be sold to us” said a woman, and a man in the same area stated: “I have confidence in the services of medical practitioners. We have to take whatever they give us.”

Cost of drugs and affordability

Drug sellers

Some drug sellers expressed the view that their customers bought drugs according to what they said they could afford, and that therefore they always ask for cheap drugs. The drug sellers reported that they thought this might involve a risk that the drugs are of low quality:

“The main reasons why low quality drugs still exist and are sold in society are that the customers wanted cheap drugs and the drug sellers wanted good profits.” (male drug seller, urban area)

Consumers

Most of the customers in the interviews (73%) did not worry about the quality of drugs (Table 4); their greatest problem was financial constraints. This topic was also brought up by all groups during the FGDs, where the participants discussed their worries about the cost of drugs and financial constraints. This seemed to be of much greater importance than worries about low quality drugs. The female urban group was an exception as cost aspects were not part of their discussion.

“I’m not afraid of drug quality but afraid of not having enough money to pay.” (urban man)

“The only problem is we don’t have enough money to buy. If we talk about money my tear will drop out, one bottle already costs 10000–15000 Kips (about US$1.4–2.1). If we don’t have this amount, we can’t get the drug.” (woman, remote area)

Discussion

In this study we have explored to what extent drug sellers and consumers recognized scientific criteria and to what extent they were elaborating on a local definition of drug quality. The drug sellers were to a large extent relating to the FDD/WHO elements of drug quality, both in the interviews and during the FGDs. However, only one had fully correct knowledge according to the four given criteria of a good quality drug, while about half of the drug sellers knew two of the four criteria. Labels, expiry dates, active ingredients and storage conditions were important elements of drug quality according to the drug sellers, but they had sometimes only a limited knowledge of these issues. For example, only two drug sellers knew the correct storage temperature for some special medicines, while a majority were aware that drugs had to be stored in a special way. The urban drug sellers seemed to have better knowledge regarding some of these issues than drug sellers in the remote and/or rural areas. Drug sellers in the remote area also expressed lack of knowledge to a higher extent.

In addition, the drug sellers also elaborated on a local construction of drug quality and defined it in terms of perceived efficacy and cost. They argued that if a patient is cured the quality of the drug is good, and also that expensive drugs are likely to be good quality drugs. Very often the drug sellers combined the scientific criteria with a local definition. They thus stated that a good quality drug is a drug with a label and expiry date, but more importantly the drug quality is good if a sick person gets well after taking the drug. The drug sellers in the urban area also reported that they trusted the drug regulatory authorities to make sure that the imported and manufactured drugs were of good quality.

The consumers also elaborated on elements of both the scientific criteria and local perceptions in assessing drug quality. Labels and change of colour in tablets were discussed, but perceived efficacy and costs seemed to be
more important. People living in the urban area appeared to have better knowledge about drugs, than those in the rural and remote areas. Reasons for this may be that people living in the urban area have a better educational level and a better opportunity to receive information on drugs from the drug regulatory authority. The scientific criteria for drug quality were thus mainly discussed in the two urban groups, while the local perceptions were dominant in the other four groups.

The consumers reported that they trusted doctors, pharmacists, drug companies and others to give them good quality drugs and their main worry was financial constraints, i.e. that they could not afford to buy the drugs they needed and they requested cheap drugs. Affordability of drugs seemed to be more important for people in the rural and remote areas than in the urban area.

Expensive drugs were believed by both drug sellers and consumers living in the urban area to generally be of good quality, the stated reasons being that most of them were usually imported trade name products from European countries. However, drug sellers should be expected to understand that, although the risk of low quality may be greater for cheap drugs, the price of the drug is not in itself a measure of its quality. The whole concept of essential drugs aims at identifying efficacious, safe and affordable drugs. Therefore, both expensive and cheaper drugs can be of both good and low quality. The quality can only be determined by checking the source of the drug (local or foreign), and the standard of production there. Dispensing of expensive non-essential drugs has been common among practitioners in low-income countries, as found, for example, in a Filipino study (Hardon 1987).

As stated above, both drug sellers and consumers assessed ‘a good quality drug’ partly by its perceived efficacy. According to Etkin (1988), all societies share a general understanding of medical efficacy as a combination of symptom reduction and other physical and behavioural transformation that indicate restoration of health. Etkin argues that in order to understand efficacy we have to understand the difference between local and outside interpretations. The local perspective is a cultural-specific one that refers to local understandings of the universe, health and healing. The outside perspective uses concepts and theories that are grounded in the biomedical ideology in order to create a framework to interpret medical beliefs and behaviours.

In our study both drug sellers and consumers were elaborating on local constructions of drug quality when they discussed a drug’s perceived efficacy. They argued that if a sick person is cured, the drug is of good quality. This view corresponds with the findings from a study in Guinea, where it was also argued that if a patient gets well, the drug given was of good quality (Haddad et al. 1998). Furthermore, the consumers were also discussing to what extent a person’s “blood and air in the body” determines if a drug is effective or not. For a lay person, in the Lao context often illiterate, it could be regarded as rational to assess drug quality in this way. However, for the professional, it should be known that many diseases are cured without treatment (self-limiting) and that treatment includes correct prescribing, dispensing and use of the appropriate drug. To a well-educated medical or pharmaceutical professional, drug quality is presumably to be understood as defined by the FDD/WHO (WHO 1997).

The limited knowledge of drug sellers in our study is potentially dangerous. It is not enough to simply trust the company and authority. A professional needs adequate knowledge on the different issues of drug quality. For sellers who did not know the right storage conditions of some vaccines and special drugs, these drugs may lose their effectiveness (Okeke et al. 1999). Drugs may deteriorate at a temperature higher than 25ºC and under high humidity (Ballereau et al. 1997), a common situation most of the year in Laos. For those who could not read the expiry dates, or kept the drugs outside the original container, it was impossible to monitor these dates, potentially resulting in the sale of expired drugs. Buying drugs from unauthorized sources introduces another level of risk. One potential explanatory factor regarding knowledge deficiencies in some aspects of drug quality is that none of the drug sellers was a qualified pharmacist, instead most often a nurse with no or little training in pharmacology.

One explanation as to why drugs were bought from illegal sources could be that drug sellers were not aware of the risks with low quality drugs (Stenson et al. 1998). Other explanations could be that they chose to buy drugs at a lower cost, and that the regulatory system, including inspections, is weak (Stenson et al. 1997; Syhakhang et al. 2001). In Lao PDR, the recording system is poor, including incomplete information on the bill/invoice. Therefore, it is not possible to inspect the sources of the drugs, and sanctions for buying drugs from illegal sources have not been possible to implement. Weakness of regulatory control is a common phenomenon in many developing countries (Roy 1994; Haak and Claeson 1996; Trostle 1996; Kumaranayake 1997), and the prevalence of substandard drugs is said to be higher in countries where drug regulation is ineffective (Po 2001; WHO 2001). However, studies from Laos show that improvement of private pharmacy services is possible (Stenson et al. 2001b).

For lay people, ‘scientific knowledge’ cannot be required. The medically correct definition of quality may not even be meaningful to them. The consumers in our study argued that they, as lay people, did not have to worry about expiry dates and fake drugs, and that it was the responsibility of the drug sellers to sell good quality drugs and they trusted the drug sellers to do so. According to Giddens (1990), trust can be seen as a fundamental principle in the functioning of modern institutions with expert systems. It is not possible to be an expert in every field in a society with modern institutions. Members of such societies therefore have to trust that each and every expert knows his/her field and delivers products and services of good quality. Still, consumer alertness is part of this process, and it would be an advantage for improving pharmacy services if people were aware that drugs can be of poor quality and have harmful effects on their health. However, about three-quarters of lay people in our study were not aware of the possible existence of low quality drugs. This could contribute to the continued existence of poor
pharmacy practices and bad performance of drug sellers, including dispensing poor quality drugs, as there is no explicit consumer demand for good quality drugs (Goel 1996). Awareness could be one important factor influencing drug quality, among other factors such as good manufacturing practice and good pharmacy practice, including effective inspections and regulatory enforcements, which have been in the process of development in Laos (Stenson et al. 2001b).

To increase awareness among consumers, the communication of adequate information regarding drugs and drug quality is needed. This could be achieved through education regarding which questions people should ask their doctors or drug sellers about the quality of drugs they receive. Using public education campaigns with context-specific techniques to draw attention to the existence of low quality drugs may be a means of increasing awareness (Po 2001). Back in 1976, Herxheimer suggested some questions which patients should ask the doctor about their prescribed drugs, including side effects. In addition, there are some points related specifically to drug quality that customers might ask a drug seller, for example to request them to label the drugs properly (name, strength, indication on use), to ask for the expiry date of the drugs, and to ask whether the drugs have been registered by the Ministry of Health. A clear label is useful also for illiterate people as they can ask somebody to do the reading for them.

There is no continuing professional development programme in Laos. Training of pharmacy staff in pharmacology, as was done in Nepal (Kafle et al. 1992), can be a way of increasing knowledge. We suggest that the drug sellers should know how to select a reliable supplier, for example, whether it is a licensed company or not, and whether the drugs they buy are essential and registered by the drug regulatory authority. They should also know how to check the accuracy of labelling, including the expiry date, and how to keep drugs under the correct storage conditions.

**Limitations of the study**

Some caution should be exercised when assessing our findings and the methods we have used. Firstly, it should be recognized that the prevalences of different views are inexact estimates, mainly due to small sample size and the not strictly random selection procedure. The results from the structured interviews should, therefore, merely be regarded as rough indicators of the actual situation.

Furthermore, there could be some bias in the answers or in the discussions as the respondents/participants might have assumed that the researchers had contacts with the authorities. Hence, they might have answered in a more complying manner, with what they thought were the appropriate answers. The provincial research assistants were sometimes known previously by a drug seller and were therefore excluded from visiting that particular pharmacy. We are also aware that the translation of the FGDs into English might have distorted the meaning of the Lao language, and measures were therefore taken to double check the appropriateness of the translation.

The number of FGDs (two for drug sellers and six for community members) was not decided according to the principle of ‘content saturation’, but in order to gain more in-depth local perceptions and views from selected women and men in each of the three geographical areas. In some of the FGDs it was difficult to get a good discussion going. Participants responded to the moderator’s questions but did not continue to discuss among themselves. This could partly be explained by the fact that this type of group discussion was unfamiliar to many people and they felt shy. One contributing factor was probably also that some participants recognized that the researchers were part of the authorities.

The uneven distribution of pharmacies and a disproportionate over-representation of pharmacies from remote areas, and a consequent under-representation of pharmacies from urban areas, form a limitation of this study to some extent. However, this was purposively arranged as the location and socio-economic status of districts were assessed to be important determinant factors for performance of pharmacy services, as well as for knowledge on drug quality. As the analyses were done on a cluster level with weighted data, the results can at least be regarded as indicative of the situation among pharmacies in the whole of Savannakhet province.

Customers were selected as they appeared in the pharmacies during a minimum of a 2-hour period. This selection introduces a potential bias as the hours of observation may influence the type of customer. For example, there may be differences between when men and women usually visit the pharmacies. This may also be different between pharmacies in districts in different areas.

**Conclusions**

We have shown limitations in scientific knowledge and low awareness about drug quality among drug sellers and among consumers. Our assumption is that improvement of drug quality will be promoted by increased knowledge and awareness not only among drug sellers, but also among consumers. Further government interventions should therefore focus on:

- Providing a basic training in pharmacology and rational use of drugs to all health professionals, and a continuing professional development programme to drug sellers, including nurses and other health staff.
- Including elements of basic knowledge on rational use of drugs and drug quality in public education campaigns, to increase awareness and demands for drug quality.
- Strengthening the enforcement of pharmacy regulations in order to be able to trace the sources of drugs in private pharmacies, enabling sanctions when appropriate.

**Endnotes**

1 One district, namely Phalanexay, was newly established in 1999, and Khanthabury, the provincial capital district, was divided into two (North and South) for the purpose of the randomized trial study.

2 Available from the first author.
References


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