Knowledge of the Health Risks Associated with the Illegal Sale of Drugs in Pointe-Noire, Congo

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Abstract ***Background:*** The parallel drug market is booming despite the health consequences. The purpose of our study was to assess the knowledge of sellers and consumers about the health risks associated with the illegal sale of drugs. ***Material and methods:*** This was a descriptive cross-sectional study, running from April 1 to August 30, 2014, i.e. 5 months, in the markets of 4 Pointe-Noire districts. Sampling was by simple random selection. ***Results:*** The study included 71 sales subjects, aged on average 35±7.4 years, with a secondary level of education in 83.1%. The sources of supply of medicines were local and external. Among the vendors, 51.2% were unaware of the effect of light on drugs, and 63.3% were unaware of the damage caused by these drugs. The study found 142 cases of consumers. The average age was 31±10.6 years. The main reason for purchasing was the low cost (62.7%). The mode of information on the dangers of these drugs was word of mouth in 57% of cases. ***Conclusion:*** This trade is an activity of the young subject, the majority of whom is of Congolese nationality.

Keywords Drugs, Illegal sales, Knowledge, Risks, Congo

1. Introduction

The phenomenon of illicit drug sales has been steadily increasing worldwide. Its characteristic is the counterfeiting of medicines in developing countries and the sale of medicines on the Internet in European countries. Also, the WHO estimates that the illicit sale of drugs represents 10% of the world market, reaching 25% of the markets of developing countries here 50% of drugs are neither prescribed nor sold according to international standards [1, 2]. To solve this problem, African countries formulated the Bamako Initiative in 1987, which is a policy to strengthen primary health care through the establishment of pharmaceutical policies and a list of essential medicines [2]. However, despite the progress made in recent years on the availability and accessibility of essential generic medicines, nearly a third of the world's population in Asia and Africa still lacks these advances [3, 4]. Indeed, this illegal sale makes available to the population medicines that are often of poor quality, devoid of active ingredients or sometimes poorly dosed with devastating consequences for health. Work in Côte d'Ivoire and Benin reported that more than

72% of the population used these drugs and 86% thought they were of good quality [3, 5]. In Congo, a study conducted in Brazzaville [6] showed that 81.7% of subjects used the parallel market for economic and social reasons. This study was conducted to assess the knowledge of sellers and consumers about the risks associated with the illicit sale of drugs.

2. Materials and Methods

This was a cross-sectional and descriptive study, running from April 1 to August 30, 2014, for a duration of five (05) months. It was carried out in Pointe-Noire, the economic capital of Congo, in the markets of four (4) districts: Lumumba (large market, border market, in front of Adolphe Sicé General Hospital), Mvoumvou (Mvoumvou market, Mayaka market), Tié-Tié (Tié-Tié market) and Loandjili (Nkouikou market, Muongo-Kamba market, Faubourg market, in front of Loandjili General Hospital). The target population was street drug sellers and consumers. We included in our study: fixed vendors located in markets and/or in front of hospitals as well as street drug consumers present on the day of the survey. However, we did not include in our study: street vendors, vendors and consumers who did not give their informed consent. Sampling was done by a simple random draw of sellers by market because there is no data indicating the exact number of sellers by market and we considered two consumers for every seller buying the

drug on the day of the survey. The sample of our study consisted of 71 vendors and 142 consumers. Data were collected after individual interviews using two semi-open questionnaires, one for vendors and one for consumers, preceded by informed consent. The information was recorded in a survey sheet with an identification number for anonymity. The study variables were:

- **Linked to sellers:**
  - ❖ Socio-demographic characteristics (sex; age; marital status: single, married, divorced, widowed; educational level: illiterate, primary, secondary and higher education; employment status: farmer, stockbreeder, retailer of other items, housewife);
  - ❖ Factors (other gainful activity, average daily income) influencing the sale of street drugs;
  - ❖ Sources of supply (local: wholesaler, relatives of the patients or outsiders: neighbouring countries) of street drugs;
  - ❖ Methods of storage of medicines (storage, after-sales storage);
  - ❖ Vendors' knowledge (good, average, none or poor) of the health risks of street drugs.
- Consumer-related:
  - ❖ Socio-demographic characteristics (sex; age; marital status: single, married, divorced, widowed; educational level: illiterate, primary, secondary and tertiary; employment status: farmer, herder, reseller of other items, housewife);
  - ❖ Factors (reason for purchase, monthly income) influencing the consumption of street drugs;
  - ❖ Attitude towards street drugs (attendance at health facilities, regularity of drug purchase, results after taking the drugs, advice from a third party, verification of the expiry date);
  - ❖ Knowledge (good, average, none or poor) of the vendors on the risks of street drugs.

At the end of the data collection, the analysis of the results was carried out with Epi data version 3.1 software for the creation of our database, and SPSS 19.0 software for data processing. The threshold of significance was set at $p < 0.05$.

- **Operational definitions:**
  - ❖ Marital status: marital status under the law (single, married, divorced, widowed, common-law);
  - ❖ Grade level: refers to the highest level of education a person has successfully completed;
  - ❖ Illiterate: people who have not learned to read and write;
  - ❖ Primary: first level of education. These are all people who have learned to read, write and learn the basics of mathematics;
  - ❖ Secondary: all the courses received in secondary school and high school, culminating in the baccalaureate;
  - ❖ Higher: university education, post-baccalaureate;
  - ❖ Professional situation: situation related to a job, an income-generating activity;
  - ❖ Farmer: a person who carries out agricultural activities related to the land;
  - ❖ Breeder: a person who carries out activities related to the breeding of animals;
  - ❖ Reseller of other items;
  - ❖ Housewife: the one who does not have a monthly income or who is unemployed;
  - ❖ Risks: possible dangers or the occurrence of an unfortunate event;
  - ❖ Illegal sale: transfer of a drug by a seller outside the official circuit (authorized by law) to a buyer to satisfy a health need;
  - ❖ Expiry date: expiry date of the product. Adherence to expiry dates is essential. It may happen that drugs when they exceed their expiry date may change appearance in tropical climates and degrade into a toxic product.
  - ❖ Income: according to ECOM2 [16]:
    - ❖ low: monthly income < 152 €;
    - ❖ average: monthly income 152-456 €;
    - ❖ high: monthly income > 456 €.

3. Results

1. Sellers:

- Socio-demographic characteristics

Table 1. Main characteristics of sellers

Vendor	Features
Average age, years	35 years ± 7.4 (33 -61)
Sex, n (%)	
Male	68 (95)
Women	3 (5)
Marital status, n (%)	
Married	8 (11.2)
Divorced	2 (2.8)
Widower	27 (38)
Common-law	34 (48)
Education level, n (%)	
None	1 (1.4)
Primary	0
Secondary I	42 (59.1)
Secondary II	17 (24)
Higher	11 (15.5)
Nationality (%)	
Congolese	65 (91.5)
Foreign	6 (8.5)
Socio-economic level, n (%)	
Low	71 (100)
Medium	0
High	0
Gainful activity, n (%)	
Exclusive drug sellers	37 (52)
Farmer sand drug sellers	31 (43.7)
Private sectorand drug vendors	3(4.3)

- The sources of supply and storage conditions:
  - ❖ Source of supply of street drugs: The study reports that 22.5% of the drugs came from abroad (Cabinda, Angola and Kinshasa DRC), drugs from wholesalers (Coopharco/Laborex) represented 29.5%, 7% were supplied by the patients' relatives, 3% by medical sales representatives and 38% by sales representatives did not reveal their source.
- How street drugs are stored

Table 2.   Distribution of sellers by conservation and storage location

Method of storage	Storage		Kiosk		House		Total	
	n	%	n	%	n	%	N	%
Caisse	13	27	2	100	5	24	20	28.1
Card board box	12	25	0	0	6	28.5	18	25.3
Trunk	18	37.6	0	0	7	33.3	25	35.2
Bag	5	10.4	0	0	3	14.2	8	11.2
Total	48	100	2	100	21	100	71	100

- How drugs are sold
  - ❖ Sale of medicines at the request of the consumer and the elements influencing their prescription

Table 3.   Distribution of Vendors by Non-Prescription Drug Sales and Prescription Elements

Study level	Opinion on the dangers of street drugs							
	Yes		No		None		Total	
	N	%	n	%	n	%	N	%
None	0	0	8	12.3	2	8.3	7	4.9
Primary	6	11.3	11	16.9	9	37.5	27	19
Secondary I	16	30.1	24	37	9	37.5	50	35.2
Secondary II	15	28.3	11	16.9	3	12.6	50	35.2
Supérior	16	30.1	11	16.9	1	4.1	30	21.1
Total	53	100	65	100	24	100	142	100

- Vendors' knowledge of drug damage in the body and level of education

Table 4.   Distribution of vendors by vendors' knowledge of drug hazards and education level

Knowledge of drug damage	Study level									
	none		Secondary I		Secondary II		Superior		Total	
	n	%	N	%	N	%	N	%	N	%
Intoxication	0	0	6	14	3	17.6	2	18	11	15.4
Antibiotic Resistance	0	0	2	5	2	11.7	3	27	7	9.8
Digestive Perforation	0	0	2	5	1	5.8	5	45	8	11.2
Don't know	1	10	32	67	11	64.7	1	10	45	63.3
Total	1	10	42	100	17	100	11	10	71	100

- Vendors' knowledge of drugs

Table 5.   Distribution of vendors according to their opinions on the effect of air and light on drugs as well as their knowledge of international non-proprietary names and verification of expiry dates according to their level of study

Vendors' opinions and knowledge	answers	Study level									
		none		Secondary I		Secondary II		Superior		Total	
		n	%	n	%	n	%	n	%	N	%
Vendors' opinion on drug exposure in the open air	Yes	1	100	5	12	0	0	0	0	6	8
	No	0	0	37	88	17	100	11	100	65	92
Vendors' Opinion On drug exposure to light	Yes	0	0	24	57	3	18	2	29	29	40.8
	No	1	100	18	43	14	82	9	42	42	52.2
Knowledge of International No proprietary Names (INNs)	Yes	0	0	8	19	10	59	8	73	73	36.6
	No	1	1	33	78.7	7	41	2	18	18	60.6
	none	0	0	1	2.3	0	0	1	9	9	2
Checking expiry dates	Yes	0	0	42	100	16	94	11	100	69	97
	No	1	1	0	0	1	6	0	0	2	3

2. Consumers:

• Socio-demographic characteristics

• Factors influencing the use of street drugs

  ❖ Reasons for purchasing street drugs:

For 62.7% of consumers, the reason given for the very low price, for 14.1% it was unit sales and 23.2% self-consumption of drugs.

• Consumers' attitudes towards street drugs

  ❖ Attendance at health facilities

Table 6. Main characteristics of consumers

Average	Features
Average age, years	31± 10.6 (16-49)
Sex, n (%)	
Male	61 (42.9)
Women	81 (57)
Marital status, n (%)	
Married	27 (19)
Single	3 (2.1)
Divorced	4 (2.8)
Widower	45 (31.7)
Common-law union	63 (44.4)
Education level, n (%)	
None	10 (1.4)
Primary	26 (59.1)
Secondary I	53 (24)
Secondary II	30 (15.5)
Higher	23 (91.5)
Nationality (%)	
Congolese	71 (100)
Foreign	0
Socio-economic level, n (%)	
Low	74 (52)
Medium	68 (48)
High	0
Employment status, n (%)	
Unemployed/homemaker	44 (30.9)
Merchants	27 (19.1)
Functionaries	20 (14.1)
Students	19 (13.4)
Private sectors workers	18 (12.7)
workers	14 (9.8)
Monthly income, n (%)	
low	134 (52)
average	45 (32)
high	00
no answer	23 (16)

Almost 79 cases (55.6%) of consumers did not attend health facilities. Of these, 61 cases (77.2%) practiced self-medication, 7 cases used churches and 11 cases used traditional medicine.

  ❖ Regular use of street drugs and results obtained after taking these drugs

The study found 132 cases (77.2%) of regular street drug users and better still, 96 cases (93.2%) reported good results.

However, among the 10 irregular consumers found, only 3 cases (7.6%) reported poor results.

  ❖ Third party advice

For the choice of medicines, 66 consumers (46.5%) bought the medicines on the advice of the sellers, 28.1% revealed that it was a personal choice and 25.4% on the advice of a third person.

  ❖ Checking the expiry date of the drugs.

Before consuming the drugs, 78 cases of consumers (54.9%) reported not checking the expiry date of the drugs before consuming them.

• Consumer knowledge of the dangers of street drugs

  ❖ Consumers' opinions on the dangers of street drugs by education level

Table 7. Distribution of consumers by education level and opinion on the dangers of street drugs

Sale of medicines at the request of the consumer						
Element of influence	Yes		No		Total	
	N	%	n	%	N	%
Age	17	27.4	0	0	17	24
Pregnancy	10	16.1	3	33.3	13	18.3
Weight	9	14.6	0	0	9	12.7
Age-pregnancy	14	22.6	2	22.2	16	22.5
None	12	19.3	4	44.4	16	22.5
Total	62	100	9	100	71	100

• Information on the dangers of street drugs

Among consumers, 81 cases (57%) reported receiving information on the dangers of street drugs. Information was received by word of mouth in 81 cases (57%) and the media reached 34 consumers (42%), while 61 cases reported never having received the information.

• Side effects recorded

  ❖ Side effects had been reported by 100 (70.4%) and in contrast 42 cases (29.5%) of consumers had not experienced any adverse effects. The side effects identified were: stomach ache (55%), palpitations (32%) and choking (13%).

  ❖ Consumers' knowledge of drug misuse

In 82 cases, (57%) of consumers were aware of the dangers of drug misuse. The most frequently cited risks were gastralgia (67.1%), death (15.9%) and intoxication (12%).

4. Discussion

The vendors interviewed in the four (4) boroughs were distributed as follows: Lumumba (17), Mvoumvou (7), Tié-Tié (20) Louandjili (27). This sample was mainly made up of male vendors (95.7%) with a secondary I school level. This male predominance was found in Mali in 2011 [6], but is contrary to those observed in Côte d'Ivoire where in 1997, this trade was female [14]. The results reported by our work

on the level of study are similar to those observed in Brazzaville in 2005, which noted in its study that 99.1% of sellers were in school, while thesis work carried out in Mali in 2011 and Burkina Faso in 2003 reported respectively that 48% of sellers were not in school and the other a very low level of study [6-8]. In Cameroon, they had an above-average level of education [4], however, in Niamey the level of education was lower [4], as well as in Benin and Côte d'Ivoire where the level of illiteracy among vendors was very high [13, 14].

Among the vendors surveyed, 52.7% were exclusive street drug sellers compared to 47.9% who also carried out other activities. These results are partly similar to those observed in Mali where 46% of sellers were engaged in other activities [9]. Concerning the method of storage of medicines, nearly 37.5% of the sellers kept their medicines in metal trunks and the majority of these sellers (67.6%) stored their medicines in after-sales depots. These results are similar to those found in Congo Brazzaville [7]. Despite the average level of education of the sellers, they were unaware of the conservation standards recommended by the World Health Organization, which showed that there are many sources of supply for street medicines. 22.5% of the drugs sold were from outside the country and 29.In Mali, Abdou Idrissa reported that pharmacies were the frequent sources of supply [10] and in Cameroon, a study also observed that sellers of the illicit circuit partly obtained their supplies from authorized wholesalers [15]. This discrepancy with our results can be explained by the porosity of our borders. A similar observation was made in Dakar in 2006, where the absence of border barriers created an enabling environment for the illicit trade in medicines because they came from neighbouring countries (Gambia, Guinea Bissau) [11]. In our study, 87.3% (n=62) of sellers were prescribing and dispensing simultaneously; the main criterion taken into account was age (27.4%). This result is similar to the one found in Niamey reporting that 74.2% of sellers, although not knowing how to read or write, played both roles: prescriber and dispenser [10]. With regard to sellers' knowledge of the effect of light on medicines, 82.3% of sellers were unaware that light could influence the quality of medicines. These results differ from those found in Brazzaville, which reported that 46.1% of its sample claimed the sun decreased the effectiveness of drugs [9].

In our study, we noted a female predominance among consumers, i.e. 60.6%. This result can be explained by the high number of housewives. The average age was 31±10.6 years. This is substantially similar to the one found in 2005 in Brazzaville [7]. Among the factors justifying the use of street drugs, we found as the main reasons for purchasing them: the low cost of street drugs, mentioned by 62.7% of consumers, followed by self-medication in 15.5% of cases and finally the sale of certain products by unit for 14.1% of consumers. A study on the factors determining the consumption of street drugs in urban areas in Cotonou [5] found similar results to those obtained in our study. Lack of financial resources and poverty could be crucial factors justifying the use of street drugs. These results are close to those found in Benin where 23.6% had an income of less than 50,000 CFA francs [8]. Among the 56.5% of consumers who do not attend health facilities, the practice of self-medication was mentioned by 77.2%. These results are higher than those observed in Benin, where 43% of subjects did not attend health facilities and 29% said that access to street drugs was easier [3]. We found that 46.5% of consumers bought the drugs after the advice of a salesman and 28% after the advice of a third person. Our results do not agree with those of Angbo-EffiKachi, who noted that 53.3% of cases, the purchase of drugs was influenced by those around them [5].

In our study, 45.7% said that street drugs are not dangerous. Our results are in contrast to those of Benin, which reported 85% of subjects were educated (secondary level and above) and knew the risks of drugs [3]. With regard to information on the dangers of street drugs, for 57% of consumers surveyed, the most frequently cited source of information was "word of mouth". In Benin, a study noted that 90% of the messages that seemed convincing came from the media (television) [3]. Concerning the misuse of medicines, 57.7% of consumers had stated that this is a health hazard, the most frequently cited risk was digestive, particularly gastralgia i.e. 67.1%. These results are lower than those found in Ouagadougou, digestive disorders accounted for 39% of the cases encountered but did not specify them [8].

5. Conclusions

This study shows that the sale and consumption of street drugs in Pointe-Noire remains a public health problem, reflecting the ineffectiveness of public authorities. This activity is mainly carried out by idle young people, sometimes with an average level of education, without scientific information that can protect equally young consumers without financial stability from danger. It therefore appears that several factors are at the root of this phenomenon, but the low cost of these drugs and the daily income of sellers are the major factors justifying the persistence of this illicit practice, which is destroying the profession of pharmacist. Poor storage of medicines, uncertain indications that sellers give to consumers and lack of knowledge among sellers about the risks associated with the illegal sale of medicines expose consumers to health risks. As a result, consumers' average knowledge of the dangers of street drugs indicates the need to increase awareness campaigns in order to improve their knowledge later on.

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