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## COMPLETENESS ASSESSMENT OF HANDWRITTEN MEDICAL PRESCRIPTIONS IN SOUTHEAST KINSHASA COMMUNITY PHARMACIES

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**ABSTRACT:** Medical prescription carefully conceived is essential to provide effective health care to the patient. It is a medicolegal document that should be legible, clear and complete. However, several studies have shown that prescription errors remain common worldwide, particularly in low-income countries the such Democratic Republic of Congo. This study aimed to explore the completeness of medical prescriptions in Southeast Kinshasa community pharmacies and to propose possible solutions. The study was conducted from January to Mai 2020. A total of 720 prescriptions were randomly sampled and assessed for key elements following WHO guidelines. Prescriptions analysis was performed using the descriptive statistics: percentage, mean and frequency. Prescribers, patients and drug details were recorded at an average rate of 54.41% (1.94-98.89%), 38.92% (0-94.17%), 38.23% (14.87-90.22%) and 59.28% (11.67-99.4%), 27.68% (3.05-90.55%), 38.71% (15.88-98.39%) from Ngaba and Lemba community pharmacies, respectively. Only 19.63% and 11.15% of drugs were written in generic names, respectively. The average drug number by prescription was 4.37 (1-10) and 3.29 (1-9), respectively. Our study revealed that prescription errors are a serious public health problem in Southeast Kinshasa. All health care professionals should make significant efforts to improve the completeness of prescriptions. On the other hand, health authorities should do their utmost to ensure laws regulating the health sector.

**INTRODUCTION:** A medical prescription is a medicolegal document used by the doctor during medical consultation to give instructions to the pharmacist in order to dispense medicines to the

patient for the treatment of his illness. To facilitate this communication between the medical profession and the pharmacist, the medical prescription must be clear, legible and contain precise instructions on the drugs to be dispensed.

More importantly, it must also be clear to the patient who is called upon to understand it well in order to effectively use the drugs prescribed by the doctor. Given its therapeutic and even legal importance, the medical prescription must contain a certain number of essential elements which are

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necessary for its effective use<sup>1, 2</sup>. The important data that a medical prescription must contain relate to the doctor (the name of the doctor, the institutional address, his telephone number, his signature, the use of the empty space below the prescribed medicines, esoteric symbol Rx), the patient (his name, address or telephone number, age, gender, weight) and the drugs prescribed (the dosage, the pharmaceutical form, the duration of use, the quantity to be used, the route of administration, posology<sup>3</sup>. Unfortunately, several studies conducted around the world have shown serious problems in relation to the quality of medical prescriptions issued by the medical profession. These problems are characterized by the absence of certain essential elements in relation either to the doctor, the patient or the prescribed medication, thus making the administration of care for the patient difficult or even ineffective<sup>4, 5</sup>.

Several causes have been implicated to explain this problem of quality of the prescriptions, we can cite, among others: negligence, inexperience or even incompetence of prescriber, the use of prescription papers that do not contain all the necessary elements and non-application of a prescription guide provided for this purpose. Even if this problem in relation to the quality of medical prescriptions can be avoided, there remains a very common public health problem throughout the world, particularly in developing countries where laws relating to the health sector are not totally applied<sup>6, 8</sup>. The health system in the Democratic Republic of Congo (DRC) is still deficient in several aspects. The regulation of the health sector, although existing, is only weakly applied<sup>9</sup>.

Few studies carried out in DRC to this effect have shown that: people not authorized to prescribe unfortunately play an important role in prescriptions circulating in the city of Mbuji-Mayi (40%), in the city of Kinshasa (55.4%) and prescription errors are common<sup>6, 7, 10</sup>. This suggests serious doubts about the quality of prescriptions, therefore serious problems in the long run in terms of public health. These few studies remained silent on several essential aspects related to the completeness of the prescriptions sheets: prescriber, patient, and drugs details. To the best of our knowledge, no published study related to the completeness of handwritten prescriptions has ever

been carried out in the district of Mont Amba, Southeast of Kinshasa. In this context, this study was initiated to assess the quality of medical prescriptions circulating in Southeast Kinshasa and possibly propose solutions to medical doctors, pharmacists and managers having public health at their expense.

**MATERIALS AND METHODS:** A retrospective study was conducted on 720 prescription orders collected from two community pharmacies by systemic random sampling over a period of five months in Ngaba and Lemba cities, Mont Amba district. Prior ethical permission was taken from the University of Kinshasa (Unikin) Ethical Committee. Patients approached for involvement in the study were informed about the study's aim and objective, and their written informed consent was obtained. Available prescription orders were photocopied of the original document presented by the patient or his parent and retained as sample proof of the current study. Handwritten prescriptions from allopathic private practitioners working at Mont Amba district of different specialities were included in the study. Electronic prescription orders were excluded from the study. The collected prescriptions were analyzed following a structured evaluation checklist by referring to various prescription formats<sup>11</sup>.

The prepared checklist was then used to explore the completeness of the prescription on the following parameters: physician details (name, qualification, registration number, address, phone number, signature, space cancellation, esoteric symbol Rx, date of prescription), patients details (name, age, gender, weight, address, contact number) and drug details (route, dosage form, dose, frequency of administration, duration of treatment, quantity to be dispensed). A total of 20 parameters were evaluated and scored for each prescription order. The minimum and the maximum scoring were 0 and 20, respectively. Taking into account the scores obtained, in relation to the quality, medical prescriptions were divided into four different categories as follows: Category A (excellent): score 16-20; Category B (good): score 11-15; Category C (fair): score 6-10 and Category D (poor): score 0-5. Data were analyzed manually by descriptive statistics using a scientific calculator.

**RESULTS:** A total of 720 prescriptions were collected in Ngaba (360) and Lemba (360) community pharmacies. The collected prescriptions were assessed on their completeness on the following parameters, prescribers details **Table 1**, patients details **Table 2** and drug details **Table 3**.

**TABLE 1: COMPLETENESS ASSESSMENT OF PRESCRIBER AND OTHER RELEVANT INFORMATION CONTAINED IN THE COLLECTED MEDICAL PRESCRIPTIONS**

Prescriber Information	Cities Involved in This Study			
	Ngaba city n = 360 (100%)		Lemba city n = 360 (100%)	
	Mentioned	Not mentioned (Errors)	Mentioned	Not mentioned (Errors)
Name	198 (55.00)	162 (45.00)	191 (53.05)	169 (46.94)
Qualification	172 (47.78)	188 (52.22)	191 (53.05)	169 (46.94)
Registration number	44 (12.22)	316 (87.78)	71 (19.72)	289 (80.28)
Address	160 (44.44)	200 (55.55)	126 (35.00)	234 (65.00)
Phone number	7 (1.94)	353 (98.06)	42 (11.67)	318 (88.33)
Signature	298 (82.78)	62 (17.22)	320 (88.88)	40 (11.12)
Space cancellation	225 (62.50)	135 (37.50)	309 (85.83)	51 (14.17)
Symbole Rx	356 (98.89)	4 (1.11)	358 (99.44)	2 (0.56)
Date of prescription	303 (84.17)	57 (15.83)	313 (86.94)	47 (13.06)
Total		1457		1319

**TABLE 2: ANALYSIS OF COMPLETENESS OF PATIENTS DETAILS IN THE COLLECTED MEDICAL PRESCRIPTIONS**

Patient details	Ngaba city n = 360 (100%)		Lemba city n = 360 (100%)	
	Mentioned	Not mentioned (Errors)	Mentioned	Not mentioned (Errors)
Name	339 (94.17)	21 (5.83)	326 (90.55)	34 (9.45)
Age	317 (88.05)	43 (11.95)	296 (82.22)	64 (17.78)
Gender	288 (80.00)	72 (20.00)	264 (73.33)	96 (26.67)
Weight	4 (1.11)	356 (98.89)	11 (3.05)	349 (96.95)
Contact number	0 (0)	360 (100)	0 (0)	360 (100)
Address	0 (0)	360 (100)	0 (0)	360 (100)
Total		1212		1263

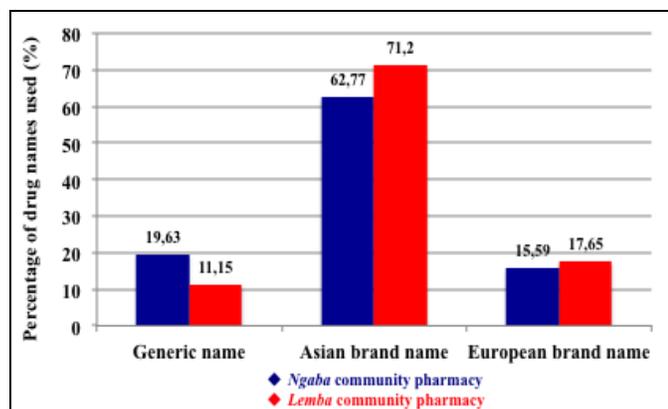
**TABLE 3: QUALITY ASSESSMENT OF PRESCRIPTION WRITING ERRORS IN DRUG ITEM DETAILS OF ALL MEDICATION PRESCRIBED**

Drug's information	Ngaba city n = 1574 (100%), average = 4.37		Lemba city n = 1184 (100%), average = 3.29	
	Mentioned	Not mentioned (Errors)	Mentioned	Not mentioned (Errors)
Route	298 (18.93)	1276 (81.07)	188 (15.88)	996 (84.12)
Dosage form	1238 (78.65)	336 (21.35)	1051 (88.77)	133 (11.23)
Dose	574 (36.47)	1000 (63.53)	437 (36.91)	747 (63.09)
Frequency of administration	1086 (68.99)	488 (31.01)	978 (82.60)	206 (17.40)
Duration of treatment	234 (14.87)	1340 (85.13)	306 (25.84)	878 (74.16)
Quantity to be dispensed	1420 (90.22)	154 (9.78)	1165 (98.39)	19 (1.61)
Total		4594		2979

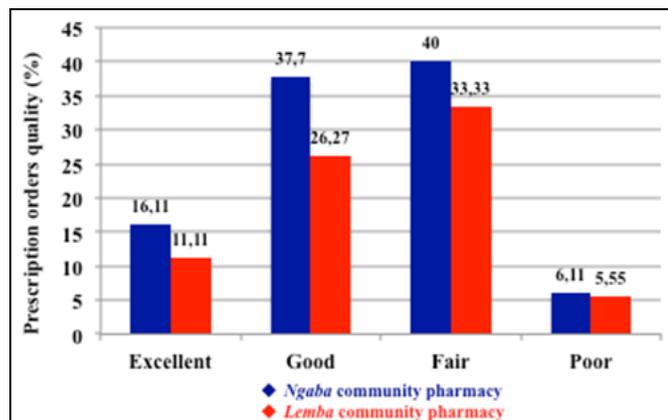
Except for prescriber signature, esoteric symbol (Rx), date of prescription orders, patient name, age and quantity to be administered in the prescription notes of both community pharmacies, gender in Ngaba community pharmacy and cancellation of the open space, dosage form, and frequency of administration in Lemba community pharmacy which were recorded with the higher percentage ranging from 80 – 100%, all other parameters were mentioned in < 75% of prescription sheets of both cities. The tenth most commonly recorded in < 75% in prescription orders of both cities were, prescriber name 198 (55.00%) and 191 (53.05%),

qualification 172 (47.78%) and 191 (53.05%), registration number 44 (12.22%) and 71 (19.72%), physician address 160 (44.44%) and 126 (35.00%), route of administration 298 (18.93%) and 188 (15.88%), dose 574 (36.47%) and 437 (36.91%) and duration of administration 234 (14.87%) and 306 (25.84%), respectively. Prescriber contact number and patient weight were recorded only in 7 (1.91%), 4 (1.11%) and 42 (11.67%), 11 (3.05%) of prescription orders, respectively. In contrast, the patient contact information was not mentioned in any of the prescriptions orders included in this study. Out of 720 prescriptions sheets assessed in

Ngaba and Lemba community pharmacies, a total of 7263 and 5561 errors, respectively, were found in different parameters such as prescribers details 1457 (20.06%) and 1319 (23.72%), patient details 1212 (16.69%) and 1263 (22.71%), drug item details 4594 (63.25%) and 2979 (53.57%) of recorded errors, respectively. A total of 1574 and 1184 drugs were prescribed, respectively. Average number of drug per prescription was 4.37 (range 1-10) and 3.29 (range 1-9) drugs, respectively. Generic name, Asian and European brand names were mentioned in 309 (19.63%), 988 (62.77%), 277 (15.59%) and 132 (11.15%), 843 (71.20%), 209 (17.65%) of drugs prescribed, respectively **Fig. 1**.



**FIG. 1: PROPORTION OF DRUGS PRESCRIBED BY NAME**



**FIG. 2: QUALITY OF MEDICAL PRESCRIPTIONS**

Regarding the quality of the prescription, the analyzed prescriptions were divided into four groups as excellent, good, fair, and poor, taking into account the obtained score. The results revealed that of the collected prescriptions 58 (16.11%) and 40 (11.11%) were excellent, 136 (37.77%) and 96 (26.67%) were good, 144 (40.00%) and 120 (33.33%) were fair, 22 (6.11%) and 20 (5.55%) were poor, respectively **Fig. 2**.

**DISCUSSION:** A standard prescription sheet should include all its important parameters to ensure good communication between a person permitted to prescribe drugs and a pharmacist to give the patient appropriate information, instructions and warnings. A properly written prescription order is an important aspect of medical practice to avoid adverse drug events, resulting in various consequences for patients. All prescriptions included in this study were assessed for the key elements of prescription writing <sup>12</sup>.

As shown in the results, prescriber name and signature were mentioned in 55.00%, 88.78% and 53.05%, 88.88% of prescriptions from Ngaba and Lemba community pharmacies, respectively, which is much lower than those observed in previous studies of other countries <sup>13, 14, 15</sup>. Studies conducted in Central Nepal reported lower adherence when compared to values from this study <sup>4</sup>. Prescriber name and signature are important elements of medical prescriptions. Lack of such information in prescriptions sheets exposes to the problem of drug misuse by patients or others, difficulty to identify the prescriber and contact him if the dispensing pharmacist needs any clarification whenever a certain misunderstanding or ambiguity on the prescription pads arises. Furthermore, the prescriber's name and signature have medicolegal implications in case of medical negligence.

It was found that prescriber qualification and registration number were recorded in 47.48%, 12.22% and 53.05%, 19.72% of filled medical prescriptions in Ngaba and Lemba, respectively. In comparison with the studies conducted in India and Saudi Arabia, there is less adherence in mentioning prescriber quality and registration number <sup>14, 16</sup>. Similar figures were reported in the study conducted in Anand City which doctor registration number was mentioned only in 17.12% of prescription orders <sup>17</sup>. On the contrary, the registration number was recorded in 94.68% of prescriptions in studies conducted in Jammu <sup>18</sup>. Doctor quality and registration numbers are very important informations that confirm the prescriber's ability to prescribe drugs. Thus, doctors are required to quote their registration number on all medical prescriptions, reports, and other documents related to their practice. The registration number is an identification parameter that could be used in

case of doubt to verify that the medical council really permits the prescriber to prescribe the human drug. In this study physician address was mentioned in 44.44% of the prescriptions from Ngaba and 35.00% from Lemba community pharmacies, while physician contact number was only reported in 1.94% and 11.67% of prescription orders, respectively. These values are lower than those reported in studies carried out in India and Nigeria<sup>14, 19</sup>. Whereas, the study conducted by Varghese *et al.* reported that only 23.1% of prescriptions orders had prescriber addresses while the prescriber contact number was totally omitted from all prescription sheets<sup>2</sup>. Physician address and phone number are very important elements of prescription order that dispensing pharmacist or patient may use to contact the physician for further information and instructions.

Date of prescription and esoteric symbol (Rx) were mentioned in 84.47%, 98.89% and 86.94%, 99.44% of the filled medical prescriptions in Ngaba and Lemba community pharmacies, respectively. Similar results were reported in Jammu<sup>18</sup>, while the studies conducted in India reported lower figures in recording esoteric symbols (62.37%)<sup>20</sup>. Recording the date on the prescription sheet is important for legal matters in case of mortality to the dispenser in filling prescriptions for controlled drugs. Moreover, the prescription date is an important part of the patient's medical record that also assists the dispensing pharmacist in identifying problems, including non-compliance<sup>4</sup>.

Cancellation of the open space was mentioned in 62.5% and 85.83% of prescription orders in both community pharmacies, respectively. A similar result was recorded in Nigeria, where space cancellation was reported in 81.77% of prescription orders screened<sup>21</sup>. Better adherence is needed in crossing off the spaces left in the prescription note, this help to limitate potential drug misuse or abuse by preventing other drug written into a prescription sheet by another person than the prescriber. In term of patient's information, patient's name was mentioned in 94.17% and 90.55% of the prescription sheets analysed in Ngaba and Lemba community pharmacies, respectively. This finding was similar to other previous studies, which stated that patient's name was recorded in 94.75%, 97.8%, and 97.9%<sup>14, 19, 20</sup>. In contrast, patient's

contact numbers and addresses were totally omitted from the prescriptions of both community pharmacies. Similar findings were reported in studies undertook in Anand city in which patient's contact number was absent in all prescriptions<sup>22</sup> and Bhosale *et al.* who stated that patient's address was also totally omitted<sup>20</sup>. On the contrary, studies conducted in Nigeria and Anand city mentioned patient's addresses in 97.8% and 34.63%, respectively<sup>19, 22</sup>. Recording patient's name, contact number, and address in the prescription notes is an important aspect of good prescribing practice. It restores the correct identity of the patient, helps in avoiding medication error, and ensures that the prescribed drug is dispensed to the proper patient, especially since in DRC it is convenient to find several patients with the same name. Pharmacists also might use this information to contact the concerned patient timely if necessary<sup>23</sup>.

In this study patients age and gender were mentioned in 88.05%, 82.22% and 80.00%, 73.33% of prescriptions sheets from Ngaba and Lemba community pharmacies, respectively while patient weight was only recorded in 1.11% and 3.05%, respectively. These figures are lower than those reported in India but are higher than those reported in the study conducted in Anand city<sup>14, 22</sup>. Patient's age, gender and weight are important factors in drug dose calculation, hence affect drugs response. Drug pharmacokinetics and pharmacodynamics might be influenced by the patient's age, gender, and weight. At the external ages, patient weight should be included in prescription notes<sup>24</sup>.

Among the prescription notes screened in both community pharmacies, dose, dosage form, and route of administration were recorded in 36.47%, 78.65%, 18.93%, and 36.91%, 88.77% 15.88% of prescriptions, respectively. In studies conducted in Central Nepal and Eritrea, better adherence was reported that dose, dosage form, and route of administration were mentioned in 67.4%, 95.5%, and 57.5% of drugs prescribed, respectively. 1, 4 However, lower figures were depicted in studies conducted in India in terms of dose (28.09%), dosage form (58.75%), and route of administration (6%), respectively. Recording dose, dosage form, and route administration of a given drug on the prescription note is very important<sup>14, 18, 22</sup>. The lack

of such information could lead to dispensing errors, which may result in drug toxicity or therapeutic failure because a number of drugs are available in different doses, dosage forms, and routes of administration. In the current study, details like frequency of administration and quantity to be dispensed were mentioned in 68.99%, 90.22% and 82.6%, 98.39% of drugs prescribed, respectively, while the duration of drug administration was only recorded in 14.87% and 25.84% of drugs prescribed, respectively. The frequency of drug administration reported in India and Ethiopia was higher than the findings of this study, while the quantity to be dispensed was similar<sup>14, 15</sup>. The duration of drug administration mentioned in the Addis Ababa and Kurdistan regions was higher than the figure mentioned in this study<sup>25, 26</sup>.

The frequency of drug administration, the quantity of drugs to be dispensed, and the duration of treatment should be clearly stated in medical prescriptions. The inadequate attention paid to this drug information may contribute to irrational drug use, treatment failure, drug resistance, and toxicities. Prescriptions were divided into four categories according to the scores obtained from the checklist. The results showed that the higher figures 40.00% and 33.33% of the prescriptions collected from Ngaba and Lemba community pharmacies belong to categories C (fair).

Dyasanoor and Urooge stated better figures, 67% of prescriptions belonging to category good<sup>27</sup>. Out of a total of 1574 and 1184 prescribed drug in Ngaba and Lemba cities, 19.63% and 11.15% only were written in generic name. WHO recommends prescribing 100% of drugs in their generic name<sup>14</sup>. Our result is dissimilar from the finding reported in Jammu, in which the usage of generic names was more common<sup>18</sup>. As revealed in this study that prescriptions containing drugs with Asian brand names were higher than those with European brand names; this can be explained by the influence of many medical representatives from Asian drug companies who promise financial benefits to prescribers.

On the other hand, it is important to understand that prescribing drug in their generic name has various advantages, such as avoiding confusion in drug name, reducing health care costs and maintaining

drug uniformity and clarity. The average number of drugs by prescription was 4.37 (range 1-10) and 3.29 (range 1-9) in each community pharmacy, respectively. The average number of drugs by medical prescription is a parameter used to assess the extent of polypharmacy, which is strongly associated with irrational drug prescribing. The results of this study are similar to those in a study conducted in Kasai-Oriental, DRC, and in teaching hospitals of Ahvaz. Still, they are higher than the findings reported in Eritrea<sup>6, 28, 29</sup>. Polypharmacy has various detrimental consequences for the patient, such as drug interactions, adverse drug reactions, patient non-compliance to therapy, medication errors, toxicities, and increased medical care costs<sup>25</sup>.

Out of 720 filled prescriptions in Ngaba and Lemba community pharmacies, a total of 7263 and 5561 errors were found in various parameters, regarding prescriber details (1457 and 1319), patient details (1212 and 1263), and drug item details (4594 and 2979) errors, respectively. Joshi *et al.*, who analyzed a total of 549 handwritten prescriptions, found a total of 13334 errors viz prescriber details (1346), patient details (3038), drug item details (5015), and others parameters (3935) errors, respectively<sup>17</sup>. Prescriptions errors are major problems among medications errors; prescriber should do their best to avoid them in the general practice to ensure patient medical care. When the results of the two community pharmacies are compared by figure, except prescriber's name and address, all the other prescriber's parameters showed better adherence to the basic standards of prescription sheet from Lemba than Ngaba community pharmacy.

In terms of patient's name, age and gender, better adherence were obtained in Ngaba community pharmacy than in Lemba community pharmacy. In contrast, the patient's body weight was only recorded in 1.11% and 3.05% of prescriptions, respectively, almost approximately the same. In both community pharmacies, patient's contact number and address were omitted. Out of the total prescribed drugs in the two community pharmacies, except the route of administration, all the others assessed parameters were better in Lemba community pharmacy than in Ngaba community pharmacy. In term of prescription order quality,

good result was recorded in Ngaba than in Lemba community pharmacy, with 16.11% excellent prescription order than 11.11%, respectively. Regarding informations such as, total number of drug prescribed, average number of drugs by prescription, prescription errors and the maximum number of drugs by prescriptions sheets, all those parameters showed lower adherence in Ngaba than Lemba community pharmacies. The difference in the social, economic, and intellectual standard of living, the negligence, or the overload of doctors could be at the basis of differences noted in the results of these two cities.

**CONCLUSION:** The results of this study demonstrated the poor quality of prescription writing in the Mont Amba district due to the lack of various essential elements of medical prescription sheets that could have medicolegal, economic, and medical consequences.

Omission of patient's contact numbers and address, low proportion of medicines prescribed by generic name and high average number of drugs by prescription are some current errors to be solved. Prescriber and drug details such as registration number, contact information, route of administration and duration of the treatment were recorded only in less than 20% of prescriptions, patient's body weight and contact information in less than 5%.

Efforts are needed in order to improve the quality of prescriptions in the Mont Amba district. Various strategies could be suggested such as the prescriber should be aware of the importance of recording all essential prescription orders parameters and understand the possible medical, economical and medicolegal detrimental consequences associated to poor prescription writing.

Furthermore, the use of computerized prescription, hospital guidelines of prescribing and continuing professional educational and managerial programs are among the solutions to consider. Regulatory strategies should be designed and implemented by the concerned administrative and technical bodies.

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