Self-medication in the internet era in the city of Ouagadougou: a survey conducted with pharmaceutical pharmacies

L'automédication à l'ère de l'internet dans la ville de Ouagadougou: une enquête menée auprès des pharmacies

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Abstract
Background and aim: Self-medication, commonplace in Ouagadougou, is facilitated by growing access to the Internet and social networks. This study analyzes the impact of these technologies on this practice and the public health challenges it poses.
Methods: It was a descriptive cross-sectional study conducted from August 1 to October 31, 2023. The study included all people using self-medication during this period. We randomly selected on-call pharmacies to survey patients purchasing medication. Data were collected using electronic questionnaires via KoboToolbox software. A logistic regression model was used to identify factors associated with the practice of self-medication via the Internet.
Results: We collected data from 697 people. Five hundred people (n=500) out of the 658 who used the Internet, i.e. 75.98%, admitted to having already looked for health-related information on the Internet. The rate of self-medication via the Internet was 55.20% (n=385). The average age for self-medication via the internet was 29.95±9.6 years [18 years - 70 years], with a sex ratio of 1.21. Self-medication via the Internet was noted among people with a higher level of education in 65% of cases. The final logistic regression model showed that lack of access to healthcare professionals, unbearable waiting times in maternity wards, and the high cost of consultation fees and prescribed medication were factors associated with the practice of self-medication via the internet.
Conclusion: Our results show the need to implement strategies to improve quality of care and facilitate access to reliable data sources for populations
Keywords: Self-medication, Internet usage, Healthcare access, Patient behavior

Résumé
Introduction : L'automédication est une pratique courante dans la ville de Ouagadougou et est facilitée par un accès croissant à l'information par le biais d'internet ou des réseaux sociaux.
Méthodes : il s'est agi d'une étude transversale menée dans les officines de la ville de Ouagadougou du 1er juin au 31 octobre 2023. Trente officines ont été tirées de manière aléatoire pour la collecte des données. Les patients pratiquant l'automédication étaient enquêtés. Les données ont été recueillies au moyen de questionnaires électroniques via le logiciel KoboToolbox. Un modèle de régression logistique a été utilisé pour identifier les facteurs associés à la pratique de l'automédication par Internet.
Résultats : Nous avons recueilli des données auprès de 697 personnes. Cinq cents personnes (n=500) sur les 658 qui ont utilisé Internet, soit 75,98 %, ont admis avoir déjà cherché des informations sur la santé sur Internet. Le taux d'automédication par Internet était de 55,20 % (n=385). L'âge moyen pour l'automédication par Internet était de 29,95 9,6 ans [18 ans - 70 ans], avec un ratio de sexe de 1,21. L'automédication par Internet a été notée chez les personnes ayant un niveau d'éducation plus élevé dans 65% des cas. Le modèle de régression logistique final a montré que le manque d'accès aux professionnels de santé, les temps d'attente insupportables dans les maternités et le coût élevé des consultations et des médicaments prescrits étaient des facteurs associés à la pratique de l'automédication par internet.
Conclusion : Nos résultats montrent la nécessité de mettre en œuvre des stratégies pour améliorer la qualité des soins et de faciliter l'accès à des sources de données fiables pour les populations
Mots clés : Automédication – Internet – Accès aux soins de santé – Comportement à risque

1. Introduction

According to the World Health Organization (WHO), "self-medication is the choice and use of a drug by a person for a condition or symptom that he has identified himself" [1]. It is therefore a practice of diagnosing and treating one's own health problems without the help or prescription of a health professional. This is a widespread phenomenon worldwide. Indeed, according to a study conducted by the French Association of the Pharmaceutical Industry for Responsible Self-Mediatrics (AFIPA), 80% of French people reported having purchased self-medicating products in 2018 [2].

In Africa, the cost of health care, considered high for most people, is most often used to justify the use of self-medication, some of which are obtained on the street, medicines whose quality cannot be guaranteed; Thus, there is a real public health problem. Several studies conducted on the continent showed high prevalence of self-medication (80% to 99%) [3,4].

Burkina Faso is not on the sidelines of this practice of self-medication. A population survey conducted by Sanfo L. [5] in the city of Ouagadougou found a prevalence of 52.6%. In 2016, Kabore and Col. found a prevalence of self-medication of 30.4% during oral diseases in the city of Ouagadougou [6]. Today, there are several sources of information available to people who self-medicate including the Internet. Its accessibility has improved over the years in the world and especially in our country with a better national mobile network coverage and a penetration rate of about 111.9% of smartphones [7]. To this is added the influence of social networks which, through the sharing of images, videos and voice messages allow access to information and relay it without any notion of reading.

Although self-medication has been mentioned many times in general in Burkina Faso, we have not found any work on self-medication through the internet allowing us to assess its importance and consequences. Our hypothesis is that in the digital age, self-medication would be a much more common phenomenon in the city of Ouagadougou, hence the interest of our study to analyze the impact of the internet on this practice.

2. Materials and methods of study

2.1. Framework Type and Period of Study

Our study was carried out in the city of Ouagadougou, capital of Burkina Faso. The urban commune of Ouagadougou is located in the heart of the Kadiogo Province. The municipality of Ouagadougou is an urban municipality with a special status that includes twelve (12) districts, fifty-five (55) sectors.

We conducted our surveys in the pharmacies of the city of Ouagadougou where the pharmacies are divided into 4 groups numbered from 1 to 4 and where each week a group of pharmacies is on duty. We have 184 pharmacies, distributed as follows:

- 47 officines for group 1
- 44 officines for group 2
- 45 officines for group 3
- 48 Officines for group 4

This was a cross-sectional study with descriptive objectives conducted over a five-month period from June 1, 2023 to October 31, 2023.

2.2. Study population

The study covered all people who used self-medication during the study period.

Were considered in our study, people with:

- usual self-medication (purchase of drugs without a prescription)
- 18 years of age or older
- consent to participate in the study

The sample size was determined using the following formula:

$$n = z^2 \times {p(1-p)}/{m^2}$$

n = sample size z = confidence level according to the reduced centered normal law (for a 95% confidence level, z = 1.96)

p = estimated proportion of the population with unknown characteristic in our case, we used a p = 0.5 which corresponds to the most unfavourable case ie the greatest dispersion m = margin of error (we want to know the actual proportion within 5%)

The minimum sample size was n: 384

We decided to investigate thirty (30) pharmacy pharmacies in the city of Ouagadougou. We made a random draw of the pharmacies' pharmacies from the list of pharmacies of the order of pharmacies. The number of pharmacy shops was chosen according to the method of proportionality to the number of pharmacies in the areas. For the different groups, the number of pharmacies to be investigated was:

- Eight for group 1;
- Seven for group 2;
- Seven for group 3;
- Eight for group 4.

The minimum number of people per pharmacy was 13.

2.3. Study variables

The study variables collected were:

- Socio-demographic characteristics;
- Internet access and use: frequency, mode of access, time spent online, use of the internet for health information search
- The practice of self-medication via internet
- Drugs that have been self-medicated through the internet
- Factors that encourage the use of self-medication through the internet
- The advantages and disadvantages perceived by people of self-medication through the internet

2.4. Collecting techniques

To gather the information needed for our study, we used an electronic questionnaire form generated on www.kobotoolbox.org and containing 23 questions.

The questionnaire was administered by face-to-face investigators on exit from the pharmacy after drug purchase. Data were collected by a team of investigators trained for this purpose with the completion of a pre-test in a pharmacy not included in the list to be investigated to adjust the questions to avoid response bias.

2.5. Data processing and analysis

Descriptive analysis was carried out using tables (simple and cross-tabulated) and by calculating frequencies and percentages. To identify factors associated with self-medication via the Internet, univariate logistic regression was used, and variables associated with self-medication at the 20% threshold were retained in a multivariate model. In the multivariate logistic regression, variables with a p-value < 0.05 were deemed statistically significant and

therefore associated with the practice of self-medication. Finally, adjusted odds ratios (AOR) with their 95% confidence intervals were reported to declare the strength and precision of the association.

2.6. Ethical considerations

Patient anonymity was respected; The confidentiality of the information gathered in this study was also preserved. We have obtained the approbation of the Health Research Ethics Committee on the date of June 07th 2024 under number 2023- 06-138.

3. Results

3.1. Socio-demographic characteristics

We surveyed 697 people. Five hundred people (n=500) out of 658 who used the internet, 75.98% said they had already searched for health-related information on the internet. The rate of self-medication through internet was 55.20% (n = 385) (table 1).

The average age for internet self-medication was 29.95 ± 9.6 years [18 years – 70 years] with a sex ratio of 1.21. Self-medication via the internet was noted in people with a higher level of education in 65% of cases.

Table 1: Sociodemographic characteristics of participants according to self-medication practice via the Internet

Features	Self-medication via the internet		Self-medication without internet	
	n	%	n	%
Age				
[18-25]	144	37,40%	121	38,78%
[26-35]	160	41,56%	107	34,30%
[36-50]	62	16,10%	66	21,15%
Over 50 years old	19	4,94%	18	5,77%
Sex				
Male	211	54,80%	188	60,25%
Female	174	45,20%	124	39,75%
Level of study				
Uneducated	4	1,03%	26	8,33%
Literacy	0	0%	3	0,96%
Quranic School	5	1,29%	11	3,52%
Primary	16	4,15%	27	8,65%
Secondary	111	28,83%	126	40,38%
Superior	249	64,67%	119	37,14%

3.2. Search for information on drugs

The research concerned pain medication (analgesic) in 51.43% of cases (table 2).

Table 2: Participants seeking information on drugs

Drugs Wanted	Staff	Percentage
Analgesic	198	51,43%
Antibiotics	162	42,08%
Cough and cold suppressant	147	38,18%
Anti inflammatory	110	28,57%
Anti Malaria	110	28,57%
Other*	40	10,39%

Other: Trace elements; Antiasthenics, Dietary supplements.

3.3. Reasons for self-medication

In 51.94% of the cases, previous positive self-medication experiences justified self-medication via the internet (table 3).

Table 3: Reasons for self-medication among participants

Grounds for appeal	Staff	Percentage
Previous positive self-medication experience	200	51,94%
Waiting time Unbearable appointment	139	36,10%
Expensive consultation or medication prescribed in consultation	147	38,18%
Mistrust of health workers or the health system	22	5,71%
Fear of hospitalization	52	13,50%
Lack of access to a health worker	59	15,32%
Other	50	12,90%

3.4. Perceived advantages and disadvantages of self-medication by patients

People were aware of the risks associated with self-medication in 64.13% (n=447) of cases; 18.22% (n=127) were partially positive and 17.6% (n=123) were not at all positive.

Of the total number of people, **38.9% (n=271)** believe that self-medication can be safe if it is supervised; **25.5% (n=178) are not certain of safe self-medication and about 35.6**% (n=248) believe that there is no possibility of safe self-medication even if it is framed.

3.5. Factors promoting self-medication

The following table shows the various factors that encourage self-medication (Table 4).

Table 4: Factors Contributing to Self-Medication

Features	**OR**	**95% IC**	**p**
Lack of access to health professionals	4,95	2,65 – 10,1	**<0,001**
Distrust of the health system	18,8	3,93 – 339	**<0,001**
Positive past experience of self-medication	32,6	17,7 – 67,4	**<0,001**
High cost of consultation fees	7,80	4,15 – 16,3	**<0,001**
High cost of prescription drugs	8,15	4,09 – 18,7	**<0,001**
Phobia of hospitalization	6,65	3,17 – 16,3	**<0,001**
Unbearable waiting in the consultation rooms	5,31	3,50 – 8,29	**<0,001**
Awareness of the risks of self-medication			**<0,001**
Non	—	—	
Yes	3,30	2,17 – 5,10	
Partially	3,89	2,31 – 6,65	
Safety of self-medication if framed			**<0,001**
Non	—	—	
Yes	9,79	6,58 – 14,8	
Not certain	3,05	2,05 – 4,59	

OR: Odds Ratio

4. Discussion

Our study focused on the practice of self-medication via the internet by residents of the city of Ouagadougou. It showed that of 697 people surveyed, practicing self-medication, 385 did so via the internet, a prevalence of 55.20%.

The high variability of prevalence could be explained by the internet penetration rate, which in our sample was 94.4% compared to 21.6% in the general population of Burkina Faso [8]. This high penetration may be due to the location of the survey. Indeed, Ouagadougou, our study framework and capital of Burkina Faso has a better network coverage which guarantees better access to the internet.

In the literature, prevalence of self-medication via the internet varied from country to country and was also related to characteristics of the study population. This prevalence was between 40% and 90% [9–14].

These relatively high prevalence rates reflect the growing importance of the internet as a source of health-related information. Indeed, the use of social networks in Burkina Faso through Facebook (more than 90% of internet uses) and WhatsApp allow anyone with access to the internet, To access and understand information without necessarily having a high level of literacy. Audio and video sharing in these groups and forums makes it easier for anyone to understand the message. This trend is explained by the digitization of the web with a facilitation of the online posting of information without the need for special computer skills. When we look at social media, we see "doctors of medicine on Facebook" who have never attended a single day of medical training but are followed by thousands of Internet users listening to the advice of these people. Better on these platforms, they can be health workers who create pages and provide advice with online medical prescription risks. Many health workers have become social media bloggers. The regulation of information management on these different networks is not taken into account in the regulatory texts of the various professional orders, which leaves a legal vacuum; Warnings about the use of digital technology in health are therefore important.

Access to online information is a reality in all countries today. Organizations around the world are failing to regulate the dissemination of information online in an efficient and secure manner. But the different structures of the countries must work on the implementation of reliable applications or websites to meet the needs of the population for information and make it accessible.

The main drugs used in our study were analgesics (51.43%), antibiotics (42.08%), antitussives and anti-colds (38.18%) and anti-inflammatory and anti-malarial drugs (28.57%). In our study, we found low intake of anti-inflammatory drugs in our study. This may be explained by the fact that our survey was conducted during the period of dengue epidemic with massive awareness campaigns on the effects of these drugs on the health of the population; This demonstrates that the implementation of an effective communication strategy could improve self-consumption of medicines.

In a study on self-medication conducted in 2022 in The Gambia among students, the drugs commonly used were analgesics (61%) and antibiotics (46%) [15]. Katengele and Al. In the Congo in 2021, noted that the drugs commonly used in self-medication were pain relief (69%), anti-inflammatory (69%), antibiotics (88%) and emergency contraception (71%) [16]. In Cameroon, authors found that the drugs commonly used in self-medication in 2022 were analgesics (85%), anti-inflammatory drugs (32%), antimalarial drugs (30%) and antibiotics (23%) [17]. With the emergence of antimicrobial resistance, enforcement of drug delivery rules could be an important element in regulating the types of drugs used in self-medication and preventing long-term public health problems. The provision of information on the main drugs used in self-medication is an important element to enable people to have access to reliable and safe information. Furthermore, the patient's pharmaceutical file could be an alternative for better management of the purchase of medicines by individuals.

In our study, the factors that promoted self-medication were previous positive self-medication experience (52%), cost of drugs and consultations (38.2%), waiting time at consultations (36%), lack of access to a health worker (15%) and mistrust of health workers (6%).

In the Nakakandé study in Uganda [13], the factors that promote internet self-medication were male sex, proximity to a pharmacy, cost of hospital care, perception of disease severity, difficulty accessing health workers, The speed of access to online information, the perceived safety of using the internet for self-medication and the lack of confidence in health workers about the explanation of their disease. In this study, patients who did not have the ability to use the internet for information search were using information shared by other users online about antibiotics to practice self-medication.

In a meta-analysis on the prevalence of self-medication in Ghana in 2023 [18], the factors for resorting to self-medication were long waiting times in care facilities (73%), previous successful experiences (67%) and the perception of low severity of the disease by patients (53%).

A meta-analysis on self-medication in developing countries [19] showed that cost, time spent in care facilities, and previous successful experience of self-medication are factors conducive to self-medication. Health professionals were generally the primary source of information on drugs and diseases.

Self-medication has economic and social implications. Economic, because the patient wants to reduce his health expenses in a context of scarce resources and lack of health insurance. And social, because health care structures

must perceive patients as clients with a requirement in terms of quality of care and reception and the health professionals is nowadays the main sources of information on social networks through their personal page. Health systems in developing countries face resource challenges with low availability and quality of care. The poor quality of care and long waiting times in healthcare facilities could be explained by the scarcity of human and material resources, thus negatively impacting patient satisfaction.

In our study, the risks and adverse effects of self-medication were known in 64% of cases. In addition, the practice of self-medication was associated with the level of education of patients. The higher the level, the more frequent the practice of self-medication.

All studies were unanimous that self-medication was associated with a high level of education [13,18–21]. This level of education would provide a sense of mastery of medical information available online and the right decision-making process when problems arise. The integration of patient education on the dangers of drugs during consultations, by providing patients with reliable, simple and appropriate information for their own health status, would help to reduce this phenomenon.

5. Conclusion

Self-medication is already quite present in the world, and it tends to develop even more in the digital age where health information is available to everyone on the internet. From our study, the prevalence of self-medication via the internet is high with a particular profile of users. This is a young subject with a high level of education and a significant use of the internet in the search for health information. The factors that promote self-medication in our context are both economic (cost of medicines, access to quality care, time lost during consultations) and social (mistrust of health workers, positive previous experience and quality). Our results show the need to regulate access to medicines by implementing existing regulations for access to medicines in pharmacies and the patient's pharmaceutical file could be an alternative for better management of drug purchase by individuals. Health structures should also implement strategies to improve the quality of care and facilitate access to reliable data sources for populations.

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