

Research Article

Factors Associated with the Financial Accessibility of Medicines in Public Health Structures in Conakry, Guinea

Yamoussa Youla^{1, 2, 3, 5, *} , **Tanou Valdez Bah^{1, 3, 4}**, **Salifou Talassone Bangoura^{1, 3}** , **Guilao Mory^{1, 3}**, **Traor éS ékou^{1, 3, 4}**, **Abdoulaye Sow³**, **Younoussa Sylla³**, **Sidikiba Sidib é³**, **Saidouba Cherif Camara^{1, 3}**, **Djiba Diakit é^{1, 3}**, **Kadio Kadio Jean Jack Olivier³**, **Abdoulaye II Tour é^{1, 3}**

¹Department of Pharmaceutical and Biological Sciences, Gamal Abdel Nasser University, Conakry, Guinea

²Chair of Public Health and Pharmaceutical Legislation, Gamal Abdel Nasser University, Conakry, Guinea

³Faculty of Health Sciences and Techniques, Gamal Abdel Nasser University, Conakry, Guinea

⁴Institute for Research and Development of Medicinal and Food Plants of Guinea, Gamal Abdel Nasser University, Dubr éka, Guinea

⁵General Health Inspectorate, Ministry of Health and Public Hygiene, Conakry, Guinea

Abstract

The aim of this study is to analyze the factors associated with financial accessibility to medicines in public health structures in Matoto, Guinea, 2022. This was a cross-sectional study, lasting six months. It concerned patients admitted for consultation in one of the public health structures in Matoto, who had received a medical prescription and who presented themselves at the point of sale of the structure where they were consulted. We performed a chi², Fischer Exact test to compare the proportions with each other. Bivariate logistic regression analysis was performed. A total of 573 patients, predominantly female 63% and single 52%, voluntarily participated in this study. We found that 30% of patients carried out a liberal activity compared to 5.93% who were civil servants. 3.14% of the subjects surveyed came from outside Conakry. We estimated the frequency of financial inaccessibility to medicines at 56.54%. This study revealed that financial accessibility to medicines in public health structures in Matoto (Guinea) is a challenge for 56.54% of patients. The associated factors are: Gender, socio-professional status, origin and age.

Keywords

Medicine, Accessibility, Financial, Matoto

1. Introduction

Population health is a major concern for all political leaders [1] and depends, among other things, on the availability of

pharmaceutical products to achieve sustainable development objectives. [2].

*Corresponding author: youla2coul@gmail.com (Yamoussa Youla)

Received: 8 March 2024; **Accepted:** 7 April 2024; **Published:** 28 April 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

However, rapidly rising healthcare costs and high drug prices are causing growing concern around the world, particularly in developing countries and countries in transition where patients often have to pay the full price. Medication [3].

The price of the drug is set according to the regulations in force in each country and is closely linked to the costs of research and development, production, transport and government taxes which are added to the manufacturer's margins. [4].

Countries around the world are implementing various pharmaceutical pricing policies and procedures in order to deal with increasing drug prices [5]. Most countries implement a combined mechanism to determine and regulate prices of pharmaceutical products. The four most commonly used policies and strategies are regulation of markups and distribution chains, external/international reference pricing, promotion of generic drug use, and tariff exemptions/taxes. [6].

Spending on medicines represents between 20 and 60% of health spending in low- and middle-income countries, compared to only 18% in European countries. In developing countries, only 10% of them have health insurance and the rest buy medicines out of pocket, making medicine the largest family expense after food. [7].

The WHO in 2013 estimates that more than 10 million deaths worldwide could be avoided each year through an effective national essential medicines policy. [8].

In Africa and South-East Asia, more than 4 million human lives could be saved each year by improving access to essential medicines but the price still remains a major obstacle for households [9]. In sub-Saharan Africa, accessibility to quality medicines also remains a major challenge. [10]. In this context, with 13% of the world population, Africa only covers 3% of global pharmaceutical production. [11]. Several studies have already shown prescribing practices that do not comply with WHO indicators of rational use of medicines, which most often leads to the high cost of medicines. [10-12].

In Guinea, accessibility to medicines is a key pillar of health policy [13]. There is a need and opportunity for health reform to improve access, affordability and equity of health products [14]. Essential medicines should meet the priority health care needs of the population [15]. One of the obstacles linked to access is the high cost of medicines and the increase in the number of medicines prescribed for prescription in structures. [16]. In addition, health and pharmaceutical structures are unevenly distributed in Guinea. [17]. To develop strategies and policies, there should be an adequate study on the current situation of problems related to the accessibility of medicines [18].

In the Guinean context, there are inequalities in access to health care and medicines [19]. Health and pharmaceutical structures are unevenly distributed, in addition to the exclusive importation of health products. The population faces geographical and financial barriers given the high percentage of illiterates and civil servants. Through this research work we

intend to carry out a descriptive diagnosis of the financial accessibility of medicines and propose possible solutions which should make it possible to considerably improve access to medicines by the population [14]. The objective of this study was to analyze the factors associated with financial accessibility to medicines in public health structures in Matoto, Guinea in 2022.

2. Material and Methods

Study Setting and Design

This cross-sectional study took place between July and December 2022, in Conakry, the capital of the Republic of Guinea. Conakry has three national hospitals, six municipal medical centers (CMC) and fifty-five primary health centers spread across five communes, namely Kaloum, Dixinn, Matoto, Matam and Ratoma. The study was carried out in the health centers of the commune of Matoto [20].

Study population:

The study was carried out on patients admitted for consultation and who received a medical prescription in one of the public health structures in the commune of Matoto.

Outcome criterion

Financial accessibility was measured by the purchase of all products prescribed in a patient's prescription at the point of sale. In the event of non-purchase of one of the products, the medicines were considered inaccessible to patients. Collection of data:

Interviewers were trained in the use of Kobocollect, software that integrates data quality assurance.

Analysis and statistics:

Categorical variables were summarized as percentages and quantitative variables were described by median and interquartile range. Pearson's Chi-square test or Fisher's exact test was used to determine significant differences between categorical variables based on their conditions of use. All analyzes were carried out in the statistical software R version 1.4.1106R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria (URL <https://www.R-project.org/>).

3. Results

Result 1: Description of participants according to profile.

Table 1. Description of participants according to profile.

Characteristic	Numbers (N=573)	Percentage
Patient gender		
Feminine	362	63.18
Male	211	36.82

Characteristic	Numbers (N=573)	Percentage
Marital status		
Bachelor	303	52.88
Bride)	270	47.12
Age in year		
Under 18	234	40.84
18 to 34 years old	217	37.87
35 years and older	122	21.29
Occupation		
Unemployed	362	63.18
Liberal activity	177	30.89
Official	34	5.93
Municipality		
Conakry	555	96.86
Outside Conakry	18	3.14
Financial accessibility		
Yes	249	43.46
No	324	56.54

A total of 573 patients participated in this study, including 63.18% (362) women. The average age of the patients was 23 \pm ... years, the predominant age group was that of those under 18 years old (40.84%), followed by that of 18 to 34 years old (37.87%). The majority of participants were unemployed (63.18%) and 30.89% exercised a liberal activity.

Table 1: The results of the study indicate that individuals under 18 years old, between 18-34 years old, 35 years old and over, women, individuals living in communes outside Conakry, individuals who do not have health insurance, are individuals with a better state of health. Individuals with a liberal activity and civil servants have a higher probability of financially accessing the drug. Illiterate and literate individuals have a lower probability of purchasing all prescribed products than primary school graduates. However, the increase in the number of people in the household does not have a statistically significant effect on the financial inaccessibility of the drug. It appears that household income has no statistically significant effect on financial inaccessibility of medication.

Result 2: the rate of financial inaccessibility to patients' medications

An average prescription cost of 86,303 GNF was identified, with a 95% confidence interval ranging from [53,074 - 106,559] GNF.

Result 3: Factors associated with financial inaccessibility to medications according to the socio-demographic characteristics of participants.

Table 2. Factors associated with financial inaccessibility to medications according to the socio-demographic characteristics of participants.

Variables	Financial accessibility		p-value
	NO	YES	
Marital status			
Bachelor	175 (57.8%)	128 (42.2%)	0.53
Married	149 (55.1%)	121 (44.8%)	
Sex			
Male	130 (61.6%)	81 (38.3%)	0.06
Feminine	194 (53.5%)	168 (46.4%)	
Occupation			
Unemployed	221 (61%)	141 (38.9%)	0.008
Liberal activity	83 (46.8%)	94 (53.1%)	
Official	20 (58.5%)	14 (41.1%)	
Origin			
Conakry	310 (55.8%)	245 (44.1%)	0.06
Outside Conakry	14 (77.7%)	4 (22.2%)	
Age class			
Under 18	140 (59.8%)	94 (40.1%)	0.005
18 to 34 years old	109 (50.2%)	108 (49.7%)	
35 years and over	75 (61.4%)	47 (38.5%)	

4. Discussion

The present study aimed to analyze the factors associated with the financial accessibility of medicines in public health structures in Matoto (Guinea). To our knowledge, it is a first in the Republic of Guinea.

The socio-demographic profile of our participants was described in **Table 1**. The methodology used during the survey was based on the ability of patients to fulfill all of the products prescribed on their prescription at the point of sale of the structure surveyed.

This study not only provides complete information on the physical availability of medicines in public health structures, the cost of treating certain common pathologies and the average cost of a medical prescription. The study showed that gender, profession, origin, and age were factors associated with financial inaccessibility to medicines. A little more than the majority of participants in our study was financially inaccessible to medications during our investigation. A certain number of characteristics linked to prescriptions, [21] age, profession and whether the patient was covered by an insurance plan or not influenced their accessibility to medications.

The affordability results provide us with an analysis of the affordability of medications for six common illnesses. A little more than half of patients could not afford all of the medications prescribed to them. A plausible explanation for this could be the low income earned by these patients, the number of medications prescribed. We also noted that the prescribed medication was not fully paid for when it comes to prescriptions intended for the youngest and the elderly, for these population groups the products were paid for in part. The analysis allowed us to know that the living environment had an impact on financial accessibility to medications. In our sample, married people paid much more for their prescription than single people. Marital obligations could explain this proportion. The unemployed represented the highest proportion of inaccessibility to medicines; this result could be explained by the high cost of medicines for this group.

Existing literature also indicates that women are more likely than men to use health care services [22]. Consistent with existing literature and our expectations, the results of this study indicate that this fact is also reflected in medication use.

This study has strengths and limitations. One of the limitations of this study is that we assessed the financial accessibility of medicines on the basis of patients' declarations, in relation to their ability to purchase the prescribed medicines at the point of sale of the structure surveyed. However, it has strengths in that it is one of the first in Guinea. It was carried out in public health structures where medicines are supposed to be very affordable.

Any inability to purchase medication in public health facilities for financial reasons may be considered as abandonment of ongoing treatment.

5. Conclusion

We conducted a descriptive cross-sectional study. Its aim was to analyse the factors associated with financial accessibility to medicines in the public health structures of Matoto. We found that gender, socio-professional status, origin and age group were the factors associated with financial accessibility to medicines. In total, we found that 43% of patients were financially inaccessible to medicines.

Access to medicines is a real public health problem for the population. Most of the patients interviewed were young, and the majority were women. In our sample, malaria was the most frequently diagnosed disease. The cost of prescriptions showed an upward trend in relation to the population's purchasing power. Incorrect or excessive use of prescriptions can have an impact on prescription costs. The majority of patients were unable to buy all the medicines prescribed, either because they were not available (42.0%) or because the amount was incomplete (10.1%). Almost half of those surveyed said that the cost of the prescription was too high (44.1%). Most of the people in charge of prescriptions had no social security cover. This assessment was made on the basis of participants' verbal statements about their ability to pay for prescriptions.

It would be preferable to consider other avenues of research to analyse the population's financial accessibility to medicines, taking into account the guidelines of the World Health Organisation, and to extend this study to the whole of the country.

Translated with DeepL.com (free version)

Abbreviations

GNF: Guinea New Franc
CMC: Municipal Medical Centers
OMS: World Health Organization

Acknowledgments

The authors thank the Director General and all the staff of the Guinea infectious diseases research and training center. We would like to thank all the students of the second PhD cohort of the African Center of Excellence in Guinea, all the assistants of the Faculty of Health Sciences and Technology who participated in the 2023 article writing workshop organized by CERFIG and all the facilitators of the said workshop.

Ethical Considerations

Approval of the investigation was obtained from the chair of public health and pharmaceutical legislation as well as that of the department of pharmaceutical and biological sciences of the Gamal Abdel Nasser University of Conakry. The informed verbal consent of the participants and their anonymity was preserved throughout the study and afterwards. Patients' personal information was coded using numbers and kept confidential. The information thus obtained was used for scientific purposes.

Informed Consent

Oral, free and informed consent from all participants was obtained.

Author Contributions

YY sent the database and did the preliminary analyzes and wrote draft. The other authors provided their expertise in correction, critical reading, the arrangement of the different sections of the article and approved the manuscript. SS and AT supervised the work and assisted in the identification of the chosen journal.

Funding

As part of the production of this article, we benefited from technical support from the infectious disease research and

training center of Guinea in collaboration with the African center of excellence of Guinea by participating in two (2) workshops organized at this effect.

Data Availability Statement

Data are available from the corresponding author and not publicly available for confidentiality reasons and may be sent to a third party if necessary.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] A. Cheikh et al. Assessment of the impact of the drop in drug prices by patients and evaluation of accessibility to care after this drop. *ReverendPublic Health Epidemiology* (2018) nd.
- [2] Mr. Hollis et al. An analysis of the drop in medicine prices in Morocco in 2014. *Valoriser la sant é*(2014) nd.
- [3] World Health Organization. Tunisia: Medicine prices, availability, financial accessibility and price components. No. WHO-EM/EDB/100/F. 2010. n/a.
- [4] Bimegdi FZ, Belaiche A, Ahid S. Evaluation of the price of medicines appearing on official bulletins in Morocco (2014–2019). *Annales Pharmaceutiques Fran çaises* 2023; 81: 1090–8. <https://doi.org/10.1016/j.pharma.2023.07.006>
- [5] Verghese, N.; Barrenetxea, J.; Bhargava, Y.; Agrawal, S.; Finkelstein, E. Government pharmaceutical pricing strategies in the Asia-Pacific region: An overview. *J. Mark. Access Health Policy* 2019, 7, 1601060. Nd.
- [6] Lee KS, Kassab YW, Taha NA, Zainal ZA. Factors Impacting Pharmaceutical Prices and Affordability: Narrative Review. *Pharmacy* 2021; 9: 1. <https://doi.org/10.3390/pharmacy9010001>
- [7] Dylst P, Simoen S. Generic medicine pricing policies in Europe: Current status and impact. *Pharmaceuticals*. 2010; 3(3): 471–481. <https://doi.org/10.3390/ph3030471> n/a
- [8] Gelders, Susanne, Ewen, Margaret, Noguchi, Nakae, et al. Price, availability and affordability. An international comparison of chronic disease medicines. *Commercialization of Medicines*. 2006. <http://apps.who.int/medicinedocs/collect/medicinedocs/index/assoc/s14135e/s14135e.pdf>
- [9] Measuring medicine prices, availability, affordability and price components. World Health Organization; 2008. Available from: <https://iris.who.int/handle/10665/70013/show-full> [Accessed 19 April 2024].
- [10] Medicines in Africa: responding to the challenges of accessibility and quality by Agence Française de Développement -Issue 2018. Nd.
- [11] AFD. Production and accessibility of medicines in Africa: the private sector as an active ingredient. ndnd.
- [12] Sangho A, Sangho F, Kaloga A. Evaluation of the prescription and dispensation of medicines in Mali in 2021. *PAMJ - One Health* 2022; 9. <https://doi.org/10.11604/pamj-oh.2022.9.26.38029>
- [13] Diarra S, Doumbia M, Diallo A, Diabate M, Cisse M. Financial accessibility of essential medicines on the front line in the Kayes circle in Mali 2020; 01. n/a.
- [14] Shrank WH, DeParle NA, Gottlieb S, Jain SH, Orszag P, Powers BW, et al. Health Costs And Financing: Challenges And Strategies For A New Administration. *Health Affairs* 2021; 40: 235–42. <https://doi.org/10.1377/hlthaff.2020.01560>
- [15] Zhang M, Zou K, Liu Z, Liu D, WangShi Y, et al. Availability of essential medicines, progress and regional distribution in China: a systematic review and meta-analysis. *Front Public Health* 2023; 11: 1149838. <https://doi.org/10.3389/fpubh.2023.1149838>
- [16] Dzudie A, Njume E, Abanda M, Aminde L, Hamadou B, Dzekem B, et al. Availability, cost and affordability of essential cardiovascular disease medicines in the south west region of Cameroon: Preliminary findings from the Cameroon science for disease study. *PLoS One* 2020; 15: e0229307. <https://doi.org/10.1371/journal.pone.0229307>
- [17] Cartographie des structures privées de sante de la ville de Conakry. USAID Guinea 2018. Available from: <https://portail.sante.gov.gn/document/cartographie-des-structures-privées-de-sante-de-la-ville-de-conakry-rapport-final-hfg-usaid-6-2018/> [Accessed 19 April 2024].
- [18] Hailemariam FH, Shifa M, Kassaw C. Availability, price, and affordability of antiepilepsy medicines in Addis Ababa, Ethiopia. *Epilepsy Open* 2023; 8: 1123–32. <https://doi.org/10.1002/epi4.12792>
- [19] Heikel J. Evaluation of the effects of universal health coverage (UHC) on the effective use of health services in Morocco nd nd.
- [20] Overall organization of the health system – PASSPE GUINÉE [Internet]. [cited Oct 16, 2023]. Available at: <https://passpe-guinee.org/organisation-globale-du-systeme-de-sante/>
- [21] Obakiro SB, Kiyimba K, Napyo A, Kanyike AM, Mayoka WJ, Nnassozi AG, et al. Appropriateness and affordability of prescriptions to diabetic patients attending a tertiary hospital in Eastern Uganda: A retrospective cross-sectional study. Al-Badriyeh D, editor. *PLOS ONE*. 5 Jan 2021; 16(1): e0245036.
- [22] Öztürk S, Başar D, Özen İC, Çiftçi AÖ. Socio-economic and behavioral determinants of prescription and non-prescription medicine use: the case of Turkey. *Daru J Fac Pharm Tehran Univ Med Sci*. Dec 2019; 27(2): 735-42.