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Prevalence of self-medication with antibiotics among adolescents with suspected genital infection in the Ngiri-Ngiri health zone in Kinshasa, Democratic Republic of the Congo

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A B S T R A C T

Adolescents are among the groups most exposed to Sexually Transmitted Infections (STIs) and most likely to resort to self-medication, which constitutes a threat to public health. This study aimed to assess self-medication practices for symptoms of sexually transmitted infections (STIs) among adolescents in the commune of Ngiri-Ngiri in the City of Kinshasa, Democratic Republic of the Congo. This cross-sectional descriptive study was conducted by interviewing 224 adolescents using ODK software. Data were processed with XLSTAT. Of the 224 adolescents, 34.3% admitted to having symptoms associated with STIs. The prevalence of self-medication with antibiotics was 45.5%. Of those who self-medicated, 70% attended school, 47% were male, and 53% were female. Of all the drugs used, amoxicillin ranked first, followed by penicillin, vaginal ovules, and tetracycline. The study also showed that some women resorted to phytotherapy. As for the source of information, 70% of teenagers confirmed that they had obtained this information from pharmacy owners, 29% from the community, and 23% from healthcare providers. Given the considerable prevalence of self-medication for symptoms associated with STIs in this environment, health workers and political decision-makers are called upon to pool their efforts to raise awareness of the rational use of medicines to reduce or even eradicate this harmful practice.

Keywords: Antibiotics, Bacterial resistance, Self-medication, DR Congo

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Introduction

Antibiotics have been an important therapeutic discovery for human health (Cazaubon, 2019). Their use has long helped to reduce global mortality and morbidity rates. However, the misuse of these antimicrobial agents and their increased use has resulted in the emergence of certain forms of resistance in microbial strains, counterbalancing the effects of antibiotics (Sarah Du Rouchet, 2012; El *et al.*, 2014; Mbembo *et al.*, 2022; Akilimali *et al.*, 2022). According to the WHO, bacterial resistance to

antibiotics is one of the top 10 public health threats facing humanity and could become the next pandemic because it renders therapeutic efforts ineffective and increases morbidity and mortality from bacterial infections (WHO, 2023; Jules, 2018; Kabena *et al.*, 2022). Indeed, compared with pathologies involving antibiotic-sensitive bacteria, infections caused by resistant germs are associated with higher morbidity and mortality (Guienne *et al.*, 2016; Krir *et al.*, 2019).

Faced with this problem, many studies have been carried out to develop alternative molecules effective against these infectious diseases. One of the consequences of antibiotic use that is increasingly being discussed is bacterial antibiotic resistance (Sadio *et al.*, 2021; Guienne *et al.*, 2016). This public health problem is strongly linked to the misuse and overconsumption of antibiotics in human and animal health, accentuated by the spread of antibiotics and resistant bacteria in the environment. In recent decades, there has been an increase in the self-medication use of antibiotics among young people and adolescents for a variety of sexual health-related symptoms (Da Silva *et al.*, 2012; Donkor *et al.*, 2012; Mbembo *et al.*, 2022; Friedman *et al.*, 2016).

Common reasons for self-medication include lack of information, fear of prejudice about sexually transmitted infections, the high cost of treating patients in health facilities, inadequate sexual and reproductive health services for adolescents and young people, the trivialization of certain diseases, disregard for drug dispensing regulations by some pharmacy vendors and adolescents' poor knowledge of the risks involved in misusing drugs and failing to master the indications, contraindications, dosages, rhythms of administration and duration of treatment (Abdi *et al.*, 2018, Chokshi *et al.*, 2019; Ramazani *et al.*, 2024).

Unfortunately, the exact statistics on the problem of self-medication with antibiotics in adolescents are not known, and most studies on the subject have a global perspective. Hence, our interest in the topic is to get an idea of the prevalence of self-medication with antibiotics in adolescents aged 15 to 19 in case of symptoms of sexually transmitted infections.

Methodology

A descriptive cross-sectional study was conducted among adolescents aged 15 to 19 in the Ngiri-ngiri commune in Kinshasa in May 2022. The study was carried out in the commune of Ngiri-Ngiri. Its population is estimated at 231,631 in 2021, with a density of 681.267 inhabitants/Km² (Menayame *et al.*, 2024; Namegabe, 2023). It is located in the urban center of the capital, and it is influenced by the intermingling of customs with several other communes that border it, such as Bumbu, Bandalungwa, Kasa-vubu, and others. The population of the health zone is predominantly young, with an average socio-economic level.

Sampling

- Target population

- All adolescents aged 15-19 living in selected households in the commune of Ngiri-ngiri.

- Inclusion criteria

- Adolescents aged 15 to 19 living in the selected geographical entity.
- Informed consent was given to participate in the survey.

Sample size

We conducted non-probability sampling for convenience, selecting respondents from among adolescents participating in a sexual and reproductive health awareness activity at the Ngiri-ngiri polyclinic. We interviewed 224 adolescents and collected the data using ODK Collect software. The database was retrieved directly from the server in Excel format. After cleaning, standard descriptive statistics were used to describe the sample.

Ethical considerations

We obtained permission from the Ngiri-Ngiri communal authority before data collection. Consent was obtained from participants by signing an informed consent form; participants were free to withdraw during data collection, and no participant was induced to participate. Refusal to participate was accepted without rancor; confidentiality was respected by collecting information anonymously. Identities were not recorded on questionnaires; instead, questionnaires were marked with codes.

Results and Discussion

Table 1. Socio-demographic characteristics.

Variables	Number of respondents n=224)	Frequency (%)	Median (E-Q)	Min- Max
Age (year)	224		17 (15.7 – 19.7)	15.0 – 19.9
Sex				
Female	142	63.4		
Male	82	36.8		
Schooling				
Yes	186	83.0		
No	38	17.0		

Table 1 shows that the sample comprised more girls than boys, and 83% of those interviewed were in school.

Table 2. Self-medication with antibiotics.

Variables	Number of respondents (n=224)	Frequency (%)
Those who are sexually active		
Yes	102	45.5
No	122	54.5
Those who experience symptoms associated with STIs		
Yes	98	43.7
No	126	56.3
Those who have had symptoms associated with STIs in the past 6 months		
Yes	77	34.3
No	147	66.7
Those who have sought treatment (n= 77)		
Yes	68	88.3
No	9	11.7
Those who have self-medicated with antibiotics (n= 68)		
Yes	31	45.5
No	37	54.5

Table 2 shows that 44% of adolescents knew how to identify symptoms associated with STIs, and 34% had experienced some of these symptoms in the 6 months preceding the survey. It also shows that 88% of these adolescents had sought treatment, and of this proportion, almost half had self-medicated. This means that the prevalence of self-medication with antibiotics for symptoms associated with STIs among the adolescents interviewed is 45.5%.

Self-medication practices by gender and educational status

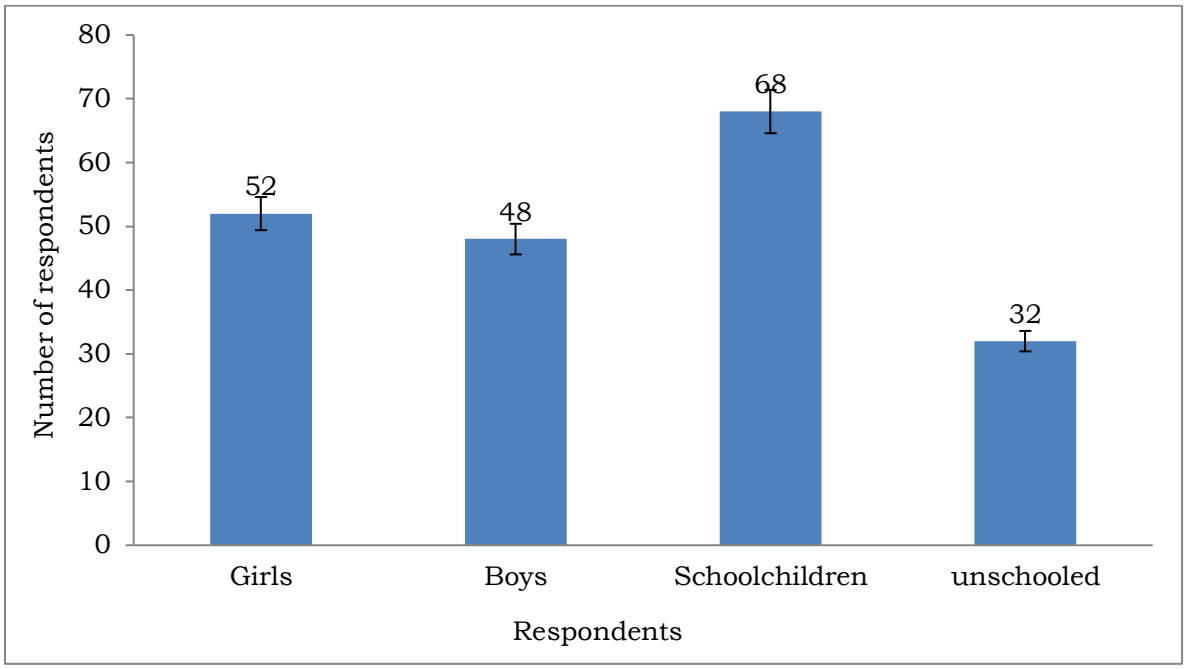

Fig. 1. Self-medication practices by gender and educational status.

Figure 1 shows that self-medication was slightly more common among girls than boys and also more common among teenagers attending school, where it was found that almost 70% of adolescents used it.

The most commonly used antibiotics by self-medicators

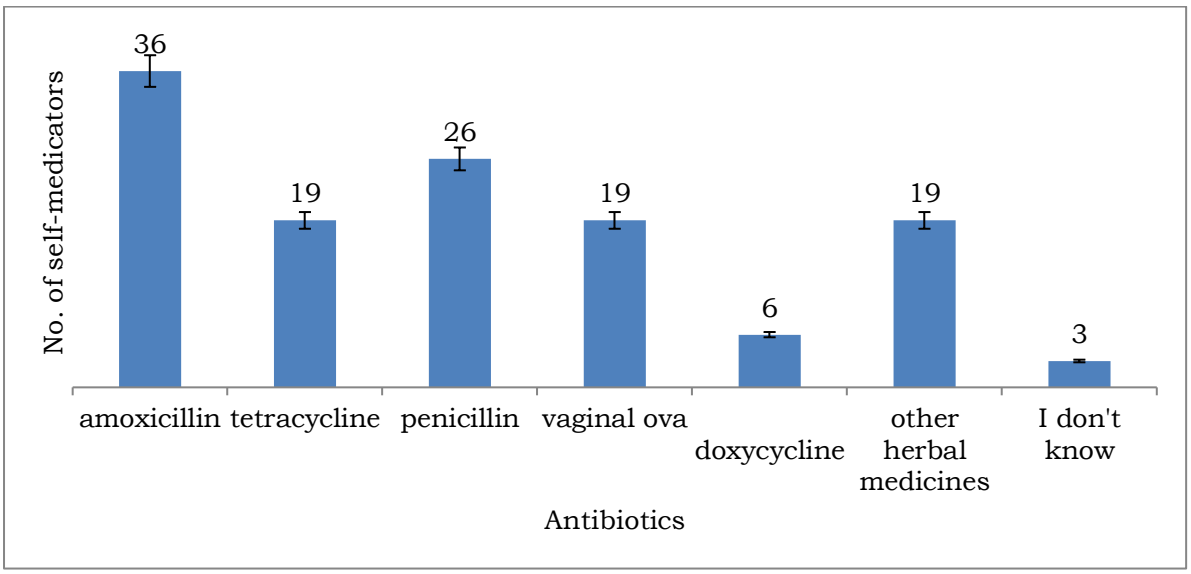

Fig. 2. The most commonly used antibiotics by self-medicators.

Figure 2 shows that the drugs most commonly used were amoxicillin, followed by penicillin, vaginal ova (which are generally neomycin compounds), and tetracycline. Some also used phytotherapy.

Adolescents' knowledge of appropriate places for care

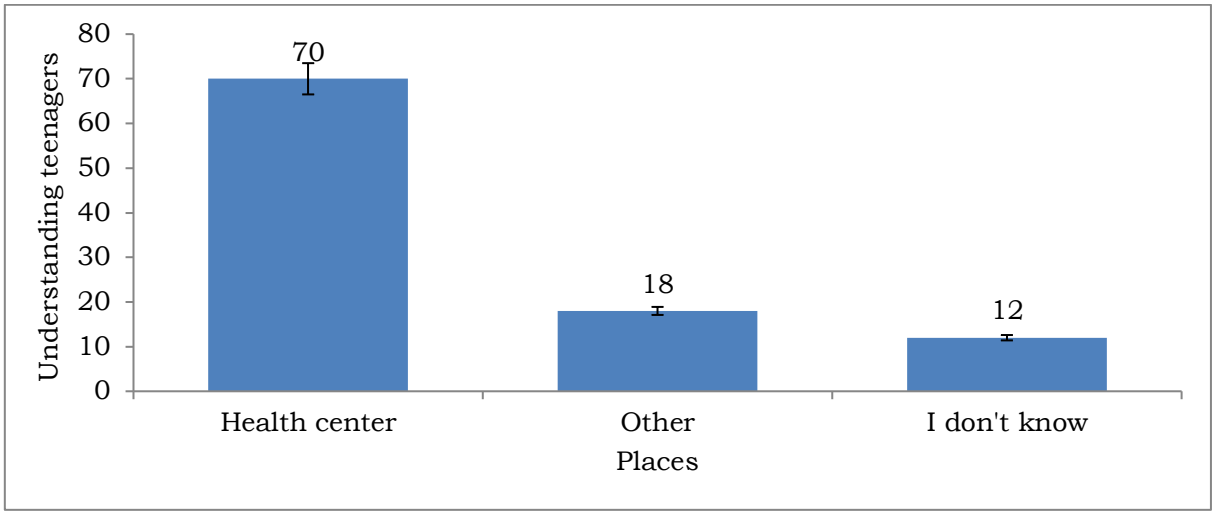

Fig. 3. Adolescents' knowledge of appropriate places for treatment.

Figure 3 shows that 70% of adolescents knew that they should go to a health centre for appropriate treatment for symptoms associated with STIs.

Sources of information for those who self-medicate

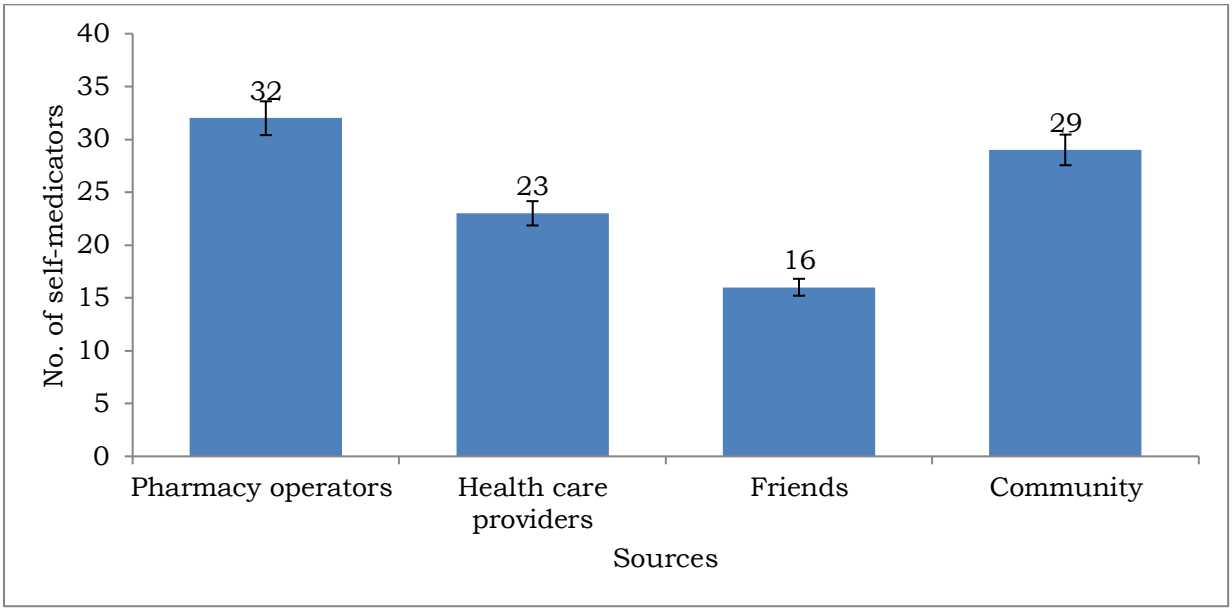

Fig. 4. Sources of information for those who self-medicate.

Figure 4 shows that the main source of information for adolescents on medicines to take for symptoms associated with STIs is pharmacy staff, followed by the community and healthcare providers; information is also shared among friends.

This study provides new insights into the extent of self-medication with antibiotics for symptoms associated with STIs in adolescents. However, our data are based on self-reports and, therefore, have limitations. To minimise recall bias and social desirability, self-medication with antibiotics was assessed for the six months preceding the survey, and confidentiality was the watchword. A total of 224 teenagers were interviewed. At least half of those interviewed were aged 17. The sex ratio was approximately two girls to one boy, and the majorities were attending school.

Regarding self-medication with antibiotics for symptoms associated with STIs in the six months preceding the survey, the results showed that just over 3 out of 10

adolescents had symptoms associated with STIs, and the prevalence of self-medication with antibiotics in our sample was almost half (45.5%). This is close to the general prevalence of self-medication in the DRC, which is estimated at 49%.

Worldwide, however, recent studies carried out in various schools and universities have revealed that the prevalence of self-medication among adolescents and young people is estimated at 25.2% [35.7-15.23], rates which are low compared with those in the present investigation. The high prevalence could be explained by the poor application of pharmaceutical regulations in the country. Certain drugs, such as antibiotics, should only be sold under prescription. Unfortunately, this rule is not enforced due to a lack of adequate monitoring by the relevant authorities.

In terms of gender, self-medication was found to be more common among girls than boys. This corroborates the study carried out in Nigeria by Wegbom *et al.* (2021) and several studies in the DRC, such as that by Mboni *et al.* (2023). And in terms of educational status, almost 3/4 of those who self-medicate are adolescents who attend school.

The antibiotics most often used are amoxicillin, which is used in more than 3 out of 10 cases of self-medication; penicillin, which accounts for 1/4 of self-medication cases; followed by vaginal ova and tetracycline, which is used in around 2 out of 10 cases. It has also been noted that some people resort to phytotherapy or traditional medicine. Other studies, such as that carried out by Chiribagula *et al.* (2015), have revealed that amoxicillin is one of the most commonly self-medicated antibiotics, as well as combinations with antibiotics and other medicines such as paracetamol, vitamin C, and other antibiotics.

The pharmacy staff is the primary source of information for teenagers about the medicines they should be taking. Furthermore, studies have shown that self-medication practices often occur through private and informal distributors of pharmaceutical products. It has been noted that there are several informal pharmacies in the country, and spontaneous requests for medicines, without presenting a prescription or asking the sales assistant for advice, are the main method of purchase, and a common practice may be one of the explanations for this problem.

Although the majority of teenagers knew that they had to go to the health centre to get appropriate care for symptoms associated with STIs, most preferred to self-medicate. This may be due to the reality of our health system, where the patient bears the cost of treatment.

The few centres subsidised to deal with sexual and reproductive health problems do not always receive their funding, and there is a shortage of staff trained to deal with young people and adolescents. But there is also the cultural aspect and the stigma attached to anything sexual for young people and adolescents, which can make it more difficult for them to agree to go to a health centre, thereby encouraging the practice of self-medication. According to the study conducted by Chiribagula *et al.* (2015), people who said they had already suffered from STIs were probably reluctant to consult a doctor, and nearly half of them admitted to having resorted to self-medication. Of these, 40.2% had used antibiotics.

Conclusion

This study confirms that self-medication is a frequent and significant practice among teenagers in this environment, among both boys and girls, and especially among those attending school when symptoms of STIs occur. The ease with which information and over-the-counter medicines can be obtained from pharmacies and health workers is thought to be a determining factor. This situation highlights the need for healthcare workers and political decision-makers to step up their efforts to promote the rational use of medicines, eradicate the practice of self-medication, and make access to drugs conditional on a medical prescription. The use of medicinal plants for self-medication raises questions about the effectiveness of collaboration between traditional medicine and biomedicine in the DRC. Community awareness-raising programmes on the risks of self-medication and increased monitoring of the sale of drugs would also be beneficial in significantly reducing self-medication among adolescents in this environment.

Conflicts of interest

The authors report that there is no conflict of interest.

Contributions of the Authors

The RNM, ONK and TTT conceived and wrote the project for this study. JJDA, JPMN and SAI drafted this work. MKM and EM conducted field studies, processed and analysed the data. All Authors have read and approved the manuscript.

References

Abdi, A., Faraji, A., Dehghan, F. and Khatony, A. 2018. Prevalence of self-medication practice among health sciences students in Kermanshah, Iran. *BMC Pharmacol. Toxicol.* 19(1): 36. https://doi.org/10.1186/s40360-018-0231-4

Akilimali, A., Bisimwa, C., Aborode, A.T., Biamba, C., Sironge, L., Balume, A. Sayadi, R., Ajibade, S.B., Akintayo, A.A., Oluwadairo, T.O. and Fajemisin, E.A. 2022. Self-medication and anti-malarial drug resistance in the Democratic Republic of the Congo (DRC): a silent threat, a review. *Trop. Med. Health.* 50: 73. https://doi.org/10.1186/s41182-022-00466-9

Cazaubon, Y. 2019. Evaluation by in silico method of the risk of emergence of bacterial resistance to antibiotics: example of fluoroquinolones and glycopeptides in geriatrics Yoann Cazaubon To cite this version: HAL Id: tel-02024627.

Chiribagula, V.B., Mboni, H.M., Amuri, S.B., Kamulete, G.S., Byanga, J.K. Duez, P. and Simbi, J.B.L. 2015. Prevalence and characteristics of self-medication among students aged 18 to 35 living at the Kasapa Campus of the University of Lubumbashi. *Pan African Medi. J.* 21: 107. https://doi.org/10.11604/pamj.2015.21.107.5651

Chokshi, A., Sifri, Z., Cennimo, D. and Horng, H. 2019. Global contributors to antibiotic resistance. *J. Glob. Infec. Dis.* 11(1): 36-42. https://doi.org/10.4103/jgid.jgid_110_18

Da Silva, M.G.C., Soares, M.C.F. and Muccillo-Baisch, A.L. 2012. Self-medication in University students from the city of Rio Grande, Brazil. *BMC Public Health.* 12: 339. https://doi.org/10.1186/1471-2458-12-339

Donkor, S., Tetteh-Quarcoo, P.B., Nartey, P., Agyeman, O.I. 2012. Self-Medication Practices with Antibiotics among Tertiary Level Students in Accra, Ghana: a cross-sectional study. *Int. J. Environ. Res. Public Health.* 9(10): 3519-3529. https://doi.org/10.3390/ijerph9103519

El, M.C., Arsalane, L., Kamouni, Y., Yahyaoui, H., Bennouar, N., Berraha, M. and Zouhair, S. 2014. Current antibiotic resistance profile of uropathogenic *Escherichia coli* strains and therapeutic consequences. *Progrès en Urologie.* 24(16): 1058-1062. https://doi.org/10.1016/j.purol.2014.09.035

Friedman, N.D., Temkin, E. and Carmeli, Y. 2016. The Negative Impact of Antibiotic Resistance. *Clin. Microbiol. Infec.* 22(5): 416-422. https://doi.org/10.1016/j.cmi.2015.12.002

Guienne, V., Marquis, C., David, M., Fleuret S., and d'Halluin, E. 2016. Self-medication in question: a socially and territorially situated hodgepodge. Nantes, France. https://hal.science/hal-01380350/document

Jules, G. 2018. Journal de la Société de Biologie Clinique du Bénin, 2018; N° 029; 99-103 Journal de la Société de Biologie Clinique du Bénin Journal de la Société de Biologie Clinique du Bénin , 2018; N° 029; pp. 99–103.

Krir, A., Dhraief, S., Messadi, A.A. and Thabet, L. 2019. Profil bactériologique et résistance aux antibiotiques bacteriological profile and antimicrobial susceptibility of isolat-. xxxii (September), pp. 197–202.

Kabena, O.N., Mbobo, J.M., Amogu, J.J.D., Asamboa, L.S., Katunda, R.M., Dianzuangani, D.M., Lukoki, F.L. and Mpiana, P.T. 2022. Antimicrobial effect of protective badges against respiratory infections "case of virus buster®. *Int. J. Med. Allied Health Sci.* 2(3): 73-77. https://doi.org/10.54618/IJMAHS.2022235

Mbembo, B.M., Inkoto, C.L., Amogu, J.O., Ashande, C.M., Nagahuedi, J.M., Mpiana, P.T. and Ngbolua, K. 2022. Mini-review on the phyto-chemistry, pharmacology and toxicology of *Cola nitida* (Vent.) Schott & Endl. (Malvaceae): A medically interesting bio-resource of multiple purposes in Africa. *Nat. Res. Human Health.* 2(3): 335-342. https://doi.org/10.53365/nrfhh/145511

Mboni, H.M., Tshikongo, A.K., Chirubagula, V.B., Shakalenga, C.M., Kanyegere, A.M., Rugema, B.B., Mushobekwa, S.S., Akiba, D.B. and Rusati, N.M. 2023. Evaluation of self-medication practices and their characteristics among Uvira in Democratic Republic of Congo students.

Pan African Medi. J. 45: 53. https://doi.org/10.11604/pamj.2023.45.53.39690.

Menayame, D.P., Mantantu, N.F. and Masunda, Y.R. 2024. Gestion des conflits de routes dans les carrefours, cas ducroisement Elengesa – Kikwit. *LE CARREFOUR CONGOLAIS.* 9(2): 239-261. https://dx.doi.org/10.4314/lcc.v9i2.11

Namegabe, N. 2023. Factors influencing the choice of care at household level in the city of Goma (DRC): case of 369 households living in FSDC/ULPGL partnership sites. Doctoral thesis, Faculté de Santé et Développement Communautaires, Université Libre des Pays de Grands Lacs de Goma ULPGL, Goma, RDC.

Ramazani, B.B. Mpasi, O.B., Ponea, C.B., Limbele, A.B., Shawanga, F.L., Tabora, R. and Onasaka, L.S. 2024. The problem of self-medication of children by parents living in the Nsele district of Kabondo Commune. *Int. J. Progr. Sci. Tech.* 45(1): 388-396. http://dx.doi.org/10.52155/ijpsat.v45.1.6409

Sadio, A.J., Gbeasor-Komlanvi, F.A., Konu, R.Y., Bakoubayi, A.W., Tchankoni, M.K., Bitty-Anderson, A.M., Gomez, I.M., Denadou, C.P., Anani, J., Kouanfack, H.R., Kpeto, I.K., Salou, M., Ekouevi, D.K. 2021. Assessment of self-medication practices in the context of the COVID-19 outbreak in Togo. *BMC Public Health.* 21: 58. https://doi.org/10.1186/s12889-020-10145-1

Sarah Du Rouchet. 2012. Prevalence of self-medication in young figure skating competitors and its implications for doping and doping behaviour. *Human medicine and pathology.* ffdumas-00924884

Wegbom, A.I., Edet, C.K., Raimi, O., Fagbamigbe, A.F. and Kiri, V.A. 2021. Self-medication practices and associated factors in the prevention and/or treatment of COVID-19 Virus: a population-based survey in Nigeria. *Front. Public Health.* 9: 606801. https://doi.org/10.3389/fpubh.2021.606801

WHO. 2023. Guidelines for the regulatory assessment of medicinal products for use in self-medication. WHO/EDM/QSM/002000. World Health Organization, Geneva, Switzerland. http://apps.who.int/medicinedocs/pdf/s2218e/s2218e