Use of Drugs During Pregnancy at the Kinshasa University Clinics, Democratic Republic of the Congo

Steve D. Kodondi[1,2*], Chancela N. Umba[3], Janine M. Kimboko[1,2], Dieu Merci M. Kabakele[1,2], Excellence N. Tongu[1,2], Gloria Y. Kangite[1,2], Roger K. Longina[1,2], Paulin K. Mulowayi[1,2], Guylain K. Nyembo[1,2], Greeta L. Botha[1,2], Nancy D. Ndaya[1,2], Jonathan N. Boleme[4], Roger M. Mbungu[5]

[1]Institute for Research in Health Sciences, Kinshasa, Democratic Republic of the Congo
[2]Center for Mixed Medicine and SS Anemia, Kinshasa, Democratic Republic of the Congo
[3]Department of Surgery, Kinshasa Provincial Referral General Hospital, Kinshasa, Democratic Republic of the Congo
[4]Department of Public Health, General Stewardship Hospital Center, Kinshasa, Democratic Republic of the Congo
[5]Department of Obstetrics Gynecology, Kinshasa University Clinics, Kinshasa, Democratic Republic of the Congo
Email: *dibkodos@gmail.com

Abstract

Context: The use of drugs during pregnancy is very little known. **Objective:** The general objective of this work is to improve the prescription and consumption of drugs during pregnancy. **Methods:** The descriptive and documentary studies on the records of pregnant women followed for prenatal consultation at the obstetrics gynecology department of the Kinshasa University clinics during the month of September of the year 2013. **Results:** 110 pregnant women with an average age of 30 ± 5 years. No major morbid history due to 93.6%, followed by arterial hypertension and pre-eclampsia which represent 2.7% each. We noted 45.2% cases of urogenital infection, followed by 20.3% cases of malaria, 13.6% intestinal parasitosis, 4.5% cases of low back pain. Antibiotics 25.9% Anti-anemics 21.8% and antispasmodics 13.2%. The majority of women were in the 2nd trimester. **Conclusion:** The results showed that medical prescriptions at university clinics do indeed respect the period of embryofetal development and the need for taking drugs.

Subject Areas

Gynecology, Obstetrics

Keywords

Drugs, Pregnancy, University Clinics of Kinshasa

1. Introduction

Nowadays, pregnant women are increasingly exposed to taking medication in order to recover their state of well-being, disturbed by the various changes occurring in their organisms.

The use of medication in pregnancy is the norm—not the exception [1].

The treatment of pre-existing or self-limiting chronic conditions including viral (e.g., human immunodeficiency virus (HIV)), fungal, or bacterial infections, solid organ transplantation, smoking cessation, and epilepsy are also common [2].

Fetal drug exposure in later trimesters may also lead to complications, as drugs may interfere with fetal growth or result in the acute interference of key homeostatic processes in the unborn child [2].

Numerous studies have shown that data regarding the risks of medications taken during pregnancy are scarce [3].

For example that carried out in 2001 by the French Agency for the Safety of Health Products which revealed that there was not enough information on the risks or the safety of more than 90% of the medicines approved by the Food and drugs administration (FDA) between 1980 and 2000 when taken during pregnancy [4]. This makes it harder for women and health care providers to decide whether or not to use medication during pregnancy.

Physicians are thus greatly deprived of relevant information on the prescription of drugs to pregnant women [5].

In practice, pregnant women are monitored during prenatal consultations by providers with different levels of training with several medical prescriptions, sometimes without taking into account the contraindications and the actual period of pregnancy.

In a study of Anick Bérard, the drugs more used were the antibiotics 47%, the anti-emetic 23% and the nonsteroidal anti-inflammatory drugs (17%) [6].

For A. A. Oumar, anti-anemics accounted for 30%. The average age was 25 ± 5 years old with extremes ranging from 15 to 38 years [7].

This is why it seemed appropriate to us to study medical prescriptions and the consumption of drugs during pregnancy.

As a result, we have ourselves the general objective to improve the prescription and consumption of medicines during pregnancy.

The specific objectives are to list the different medications, to classify them by respective pharmacological groups, to list the diagnoses or symptoms for which they are prescribed and to look for possible harmful effects of drugs.

2. Methods

2.1. Setting and Type of Study

We carried out a documentary and descriptive study from September 1, 2013 to September 30, 2013, from the individual prenatal consultation file in the obstetrics gynecology's department of the university clinics of Kinshasa in DRC.

2.2. Study Population

110 pregnant women randomly sampled by taking 1 sheet out of the 3 pregnant women consulted during the study period.

2.3. Inclusion Criteria

We included all the cases followed at the prenatal consultations during the study period and whose records contained the variables sought for the study.

2.4. Exclusion Criteria

We excluded all cases that did not benefit from medical prescriptions and those that were missing data.

2.5. Parameters of Interest

The variables of interest were: age, date of last menstrual period, history, allergies, pathologies or symptoms developed during pregnancy as well as trimester, recommended treatment (name of drug, form, pharmacological class, dosage and duration).

The results were entered on a computer using Statistical Package for Social Sciences "SPSS" software version 20.0 after encoding.

We used descriptive statistics: the arithmetic mean and the percentage to analyze our results.

The lack of some data in the files of our pregnant women was the difficulty encountered.

3. Results

Table 1 and Figure 1 show the distribution of pregnant women according to the age groups. On a total of 110 pregnant women, the age group 30 - 34 years is the most represented with 31.8%, the average age was 30 ± 5 years.

Table 2 and Figure 2 show the distribution of pregnant women according to antecedents. The majority of pregnant women have no major morbid history with 93.6%.

Table 3 and Figure 3 show the distribution of pregnant women according to allergies. We have listed 90.9% of pregnant women who have no allergy, 2.7% with bactrim; 1.8% with quinine, 1.8% chloroquine and 1.8% with artemisin derivatives.

Table 4 and Figure 4 show the distribution of pregnant women according to the pathologies and symptoms developed. We have listed 45.2% of cases of urinary and cervicovaginal infection, 20.3% for malaria, 13.6% of cases for intestinal parasitosis, 4.5% of cases for low back ache, 4% of case for nausea and vomiting, 2.8% of case for hypogastralgia and varicose veins, 2.3% of case for high blood pressure.

Table 5 and Figure 5 show the distribution of pregnant women according to the pharmacological form. The tablets are more used with 38.2%, followed by

Table 1. Distribution of pregnant women according to age groups.

Age group	Frequency	Percentage
20 - 24	8	7.3
25 - 29	30	27.3
30 - 34	35	31.8
35 - 39	29	26.4
40 - 44	6	5.5
45 - 49	2	1.8
Total	**110**	**100**
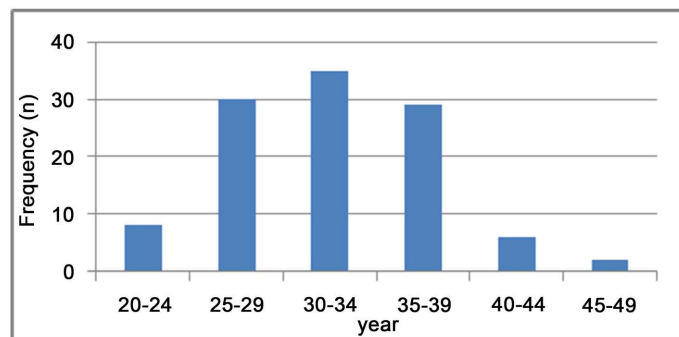
Figure 1. Distribution of pregnant women according to age groups sourced from our study.

Table 2. Distribution of pregnant women according to antecedents.

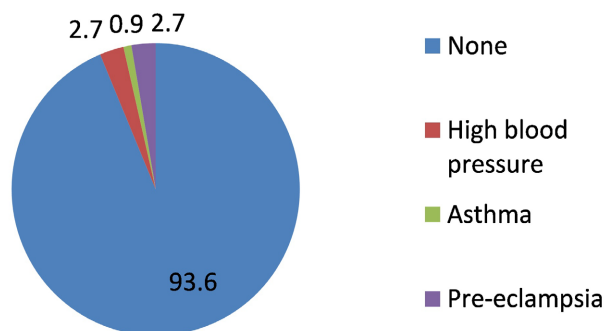| Antecedent	n	%
None	103	93.6
High blood pressure	3	2.7
Asthma	1	0.9
Pre-eclampsia	3	2.7
Total	110	100

Figure 2. Distribution of pregnant women according to antecedents sourced from our study.

Table 3. Distribution of pregnant women according to allergies.

Allergie	n	%
No one	100	90.9
Bactrim	3	2.7
Quinine	2	1.8
Aspirine	1	0.9
Chloroquine	2	1.8
Artemisin derivatives	2	1.8
Total	110	100
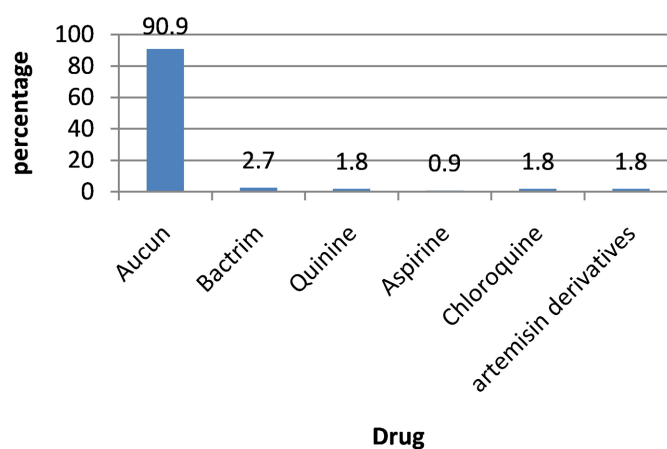
Figure 3. Distribution of pregnant women according to allergies sourced from our study.

Table 4. Distribution of pregnant women according to the pathologies and symptoms developed.

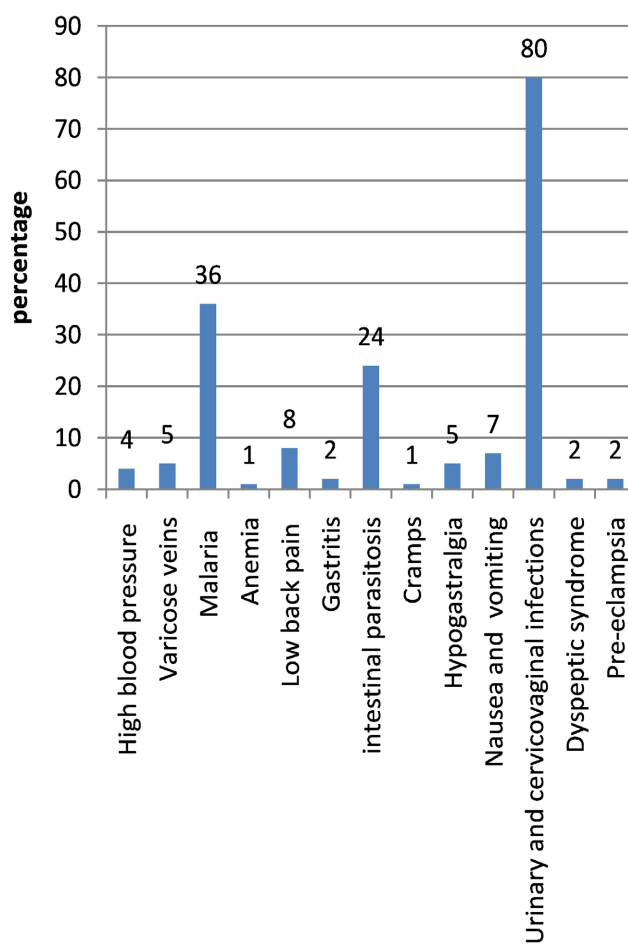| Pathology and symptom	n	%
High blood pressure	4	2.3
Varicose veins	5	2.8
Malaria	36	20.3
Anemia	1	0.6
Low back pain	8	4.5
Gastritis	2	1.1
Intestinal parasitosis	24	13.6
Cramps	1	0.6
Hypogastralgia	5	2.8
Nausea and vomiting	7	4.0
Urinary and cervicovaginal infections	80	45.2
Dyspeptic syndrome	2	1.1
Pre-eclampsia	2	1.1
Total	**177**	**100**

Figure 4. Distribution of pregnant women according to the pathologies and symptoms developed sourced from our study.

Table 5. Pharmacological form of drug.

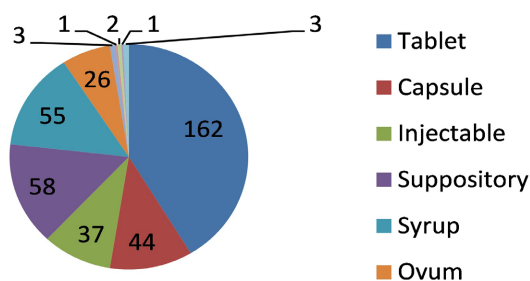| Form	n	%
Tablet	162	38.2
Capsule	44	17.9
Injectable	37	8.7
Suppository	58	13.7
Syrup	55	13.0
Ovum	26	6.1
Cream	3	0.7
Drinkable ampoule	1	0.2
Solution	2	0.5
Drops	1	0.2
Suspension	3	0.7
Total	**424**	**100**

Figure 5. Distribution of pregnant women according to the pharmacological form sourced from our study.

the suppositories with 13.7%. The syrup represents 13%, capsules represent 17.9% and the injectable represents 8.7%.

Table 6 and Figure 6 show the distribution of pregnant women according to the trimester. During the second trimester, the consumption of drugs is increased with 56.5% followed by the First trimester with 27.4% and ending with the third semester with 16.1%.

Table 7 and Figure 7 show the distribution of pregnant women according to the pharmacological group. The more used are the antibiotics with 25.9% followed by anti-anemic 21.8%, the antispasmodics with 13.2%, the antimalarial 11.4% and the anti-helminthic 5.9%.

Table 6. Trimester of pregnancy.

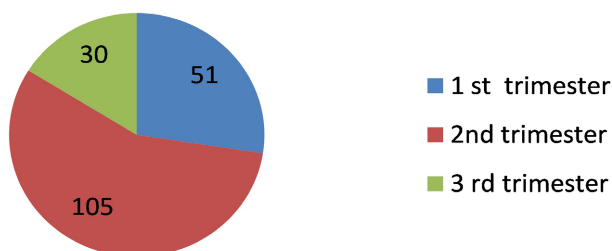| Trimester	n	%
1st trimester	51	27.4
2nd trimester	105	56.5
3rd trimester	30	16.1
Total	**186**	**100**

Figure 6. Distribution of pregnant women according to the trimester sourced from our study.

Table 7. Drugs according to pharmacological groups.

Pharmacological group	n	%
Antihypertensive	7	1.6
Antisludge	10	2.3

Continued

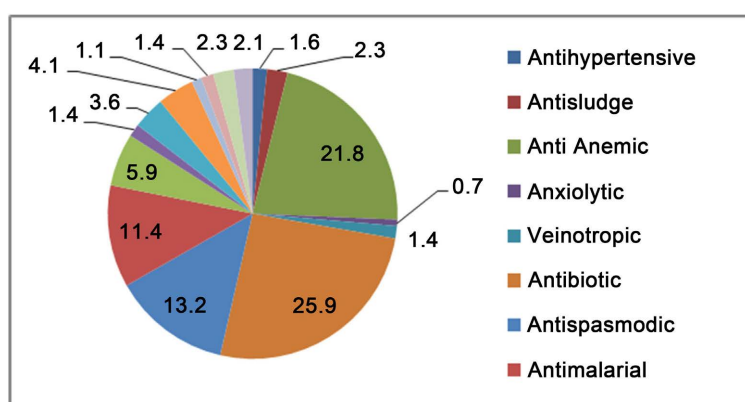|		
Anti Anemic	96	21.8
Anxiolytic	3	0.7
Veinotropic	6	1.4
Antibiotic	114	25.9
Antispasmodic	58	13.2
Antimalarial	50	11.4
Anti helminthic	26	5.9
Vitamin	6	1.4
Antibiotic + antifungal	16	3.6
Analgesia	18	4.1
Antifungal	5	1.1
Antiemetic	6	1.4
Anti acid	10	2.3
Others	9	2.1
Total	**440**	**100**

Figure 7. Distribution of pregnant women according to the pharmacological group sourced from our study.

4. Discussion

Our study involved 110 pregnant women from records in the obstetrics gynecology department of university clinics in Kinshasa.

The age of pregnant women varied between 20 and 49 years with a greater frequency in the 30 to 34 age group, *i.e.* 31.8%, followed by that of 25 - 29 years, *i.e.* 30% and 35 - 39 years, *i.e.* 29%. Compared to A. A. Oumar, *et al.* in whom the age varied from 15 to 38 years with a greater frequency of 15 to 24 years or 54.2%. The latter is justified by the inexperience of young people, the lack of information, early wedding and unfavorable socio-economic conditions [7].

Our study almost agrees with that of GOITA which found a greater frequency in the age group of 25 to 29 years [8].

The majority of women who were followed during the prenatal consultation had no major morbid history due to 93.6%, followed by arterial hypertension

and pre-eclampsia which represent 2.7% each.

In a study by C. ITOUA, *et al.*, the frequency of hypertension prior to pregnancy was 8.29% [9].

High blood pressure is a major risk factor for mortality during pregnancy, and is the third leading cause of maternal mortality and the leading cause of perinatal mortality [10] [11].

Allergies are reactions of the body to an extrinsic agent. The drugs incriminated in our study are antimalarials (chloroquine, quinine and the artemisin derivatives) and sulfonamides (bactrim).

We noted 45.2% cases of urogenital infection, followed by 20.3% cases of malaria, 13.6% of intestinal parasitosis, 4.5% of cases of low back pain, 4% of cases of nausea and vomiting. Urinary tract infections are relatively common in pregnancy and may result in significant morbidity for the pregnant woman and fetus [12]. Tsobo, *et al*, have found 13.3% for urinary tract infection, 10.1% for bacterial vaginosis and sexually transmitted infection 4.1% [13]. Malaria in pregnant women represents an important cause of maternal anemia and a major risk of giving birth of giving birth to low birth weight children [14].

Prescriptions during antenatal consultations were essentially 25.9% for antibiotics, 21.8% for antianaemics, 11.4% for antimalarials, and 13.2% for antispasmodics in the 2nd trimester compared to that of Oumar, *et al.* Antispasmodics 9.6%, Analgesics/antipyretics 6.6%, anti-emetics 2.8% [7].

For David M. Hass, *et al.*, The most commonly prescribed medications were gastrointestinal or anti-emetic agents [34.3%]; followed by antibiotics [25.5%] and analgesics [23.7%]; essentially in the 1st trimester [15].

Allergies were noted with bactrim and quinine unlike Ouedraogo at all who noted effects with chloroquine, iron and folic acid linking this to the pregnancy effect of pregnant women [14].

The oral forms were the most prescribed with 69.1% compared to Ouedraogo which had 81% [16].

This is explained by the ease of administration of the drugs by the oral route.

Primary prevention through mandatory folic acid fortification would considerably reduce the number of affected pregnancies [17].

In our study the drugs were more used in the 2 nd trimester but For David M. Hass, *et al.*, medication use in pregnancy is ubiquitous and that most pregnant women take multiple medications, including during the first trimester. Gastrointestinal medications, antibiotics, and analgesics were the most commonly taken medication classes [15].

5. Conclusions

The drugs prescribed during the prenatal consultations at the university clinics of Kinshasa take into account the pathologies, the symptoms, the history as well as the embryofetal development.

The safety of the drugs in pregnant women remains an area that is un-

der-evaluated. There is no incentive for manufacturers to undertake reproductive safety studies.

Treatment of an acute or chronic condition may lead the healthcare professional to consider the need for drug treatment in a woman during her pregnancy.

Conflicts of Interest

The authors declare no conflicts of interest regarding this work.

References

[1] Dathe, K. and Schaefer, C. (2019) The Use of Medication in Pregnancy. *DÄ International*, **116**, 783-790. https://doi.org/10.3238/arztebl.2019.0783

[2] Ke, A.B., Greupink, R. and Abduljalil, K. (2018) Drug Dosing in Pregnant Women: Challenges and Opportunities in Using Physiologically Based Pharmacokinetic Modeling and Simulations. *CPT*: *Pharmacometrics & Systems Pharmacology*, **7**, 103-110.

[3] Yaffe, S.J. (2002) Drugs in Pregnancy and Lactation. 6th Edition, Lippincott William Wilkins, Philadelphia.

[4] Andrade, S.E., Gurwitz, J.H., Davis, R.L., Chan, K.A., Finkelstein, J.A., Fortman, K., *et al.* (2004) Prescription Drug Use in Pregnancy. *American Journal of Obstetrics & Gynecology*, **191**, 398-407. https://doi.org/10.1016/j.ajog.2004.04.025

[5] Montastruc, J.L., *et al.* (2000) Prescription of Drugs during Pregnancy in France. *The Lancet*, **356**, 1735-1736. https://doi.org/10.1016/S0140-6736(00)03209-8

[6] Bérard, A. and Sheehy, O. (2014) La cohorte des grossesses du Quebec: Prévalences et conséquences de l'utilisation des médicaments Durant la grossesse. *Thérapie*, **69**, 71-81. https://doi.org/10.2515/therapie/2014011

[7] Oumar, A.A., Guindo, A., Sanogo, M., Cissoko, Y., Magass, N., *et al.* (2019) Drug Prescription during Pregnancy in the Reference Health Center of Koutiala, Mali, in 2016. *Le Pharmacien Hospitalier et Clinicien*, **54**, 325-332. https://doi.org/10.1016/j.phclin.2019.08.003

[8] Goita, N. (2006) Evaluation de la qualité des consultations prénatales au service de gynécologie obstétrique de centre de santé de référence de commune de District de Bamako. These, Médecine université de Bamako, Bamako.

[9] Itoua, C., Ngounda Monianga, A.S., Ellenga Mbolla, B.F., *et al.* (2013) Hypertension artérielle et grossesse: Epidémiologie et pronostic materno-fœtal au Centre Hospitalier Universitaire de Brazzaville (Congo). *Médecine d'Afrique Noire*, **60**, 21-29.

[10] Cisse, C.T., Ndiaye, M.F. and Diouf, B. (1995) Hypertension artérielle de la femme enceinte en Afrique noire. *La Semaine des hopitaux de Paris*, **71**, 167-177.

[11] Lansac, J., Berger, C. and Magnin, G. (1997) Hypertension et grossesse. Obstétrique pour le praticien. 3e édition, Masson, Paris, 165-176.

[12] Gilstrap III, L.C. and Ramin, S.M. (2001) Urinary Tract Infections during Pregnancy. *Obstetrics and Gynecology Clinics of North America*, **28**, 581-591. https://doi.org/10.1016/S0889-8545(05)70219-9

[13] Muanda, F.T., Sheehy, O. and Bérard, A. (2017) Use of Antibiotics during Pregnancy and Risk of Spontaneous Abortion. *CMAJ*, **189**, E625-E633. https://doi.org/10.1503/cmaj.161020

[14] Hviid, L. (2006) Le paludisme chez la femme enceinte. *Medecine Tropicale*, **66**, 130-132.

[15] Haas, D.M., Marsh, D.J., Dang, D.T., *et al.* (2018) Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-Be (nuMoM2b) Study. *Obstetrics & Gynecology*, **131**, 789-798. https://doi.org/10.1097/AOG.0000000000002579

[16] Ouedraogo, M., Kabore, L., Ouedraogo, M., *et al.* (2009) Etude de l'exposition médicamenteuse des femmes enceintes consultant dans les formations sanitaires périphériques de la commune urbaine de Ouagadougou. *Sciences de la Santé*, **32**, 25-36.

[17] Obeid, R., Pietrzik, K., Oakley Jr., G.P., *et al.* (2015) Preventable Spina Bifida and Anencephaly in Europe. *Birth Defects Research* (*Part A*), **103**, 763-771. https://doi.org/10.1002/bdra.23400