Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021

Abstract

Introduction: Physiological alterations during pregnancy as well as the bio-conversion of compounds can significantly influence the teratogenic effects of drugs and chemicals by affecting absorption, body distribution, the active form(s), and excretion of the compound. Certain medications may cause harm to the foetus due to their potential teratogenic effects and the physiological adjustments occurring in the mother during pregnancy. Prescription of drug used by pregnant women should be viewed as one of a public health issue. This study aware health care workers on harmful drugs prescription to pregnant women and helps in understanding the type of medication used during pregnancy and safety of drugs used during pregnancy, thereupon this study was ascertain drug usage pattern and potential teratogenicity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital.

Methods: A hospital-based cross-sectional study design was carried out from April 13/2021 to June 15/2021. Data was collected through employing semi-structured questioner, and then the collected data was cleared, coded and analyzed by statistical packages for social sciences 25.0 version statistical software. Descriptive statistics were used to describe the data. P value <0.05 was considered as a cut point for statistical significance in the final model.

Results: A total of 156 participants were interviewed of whom, 81(51.9%) pregnant women were age between 20-35 years old and a majority 113(72.4%) of them were married. Among medical condition majority 40(25.6%) of the participants had peptic ulcer disease and 28(16.7%) urinary tract infections followed by 20(12.8%) acute illness and 12(7.7%) hyperemesis. Among the total drug prescribed for pregnant women 30(19.2%) FDA category C was the common followed by 29 (18.6%) FDA category B and 26(16.7%) FDA category D. Only 10(6.4%) of prescribed drug were FDA category X. Pregnant women whose age >35 years (AOR=4.05, 95%CI:1.274-1.903; p=0.001), urban residents (AOR=2.72, 95%CI:2.524-3.927; p=0.035), and pregnant women during second trimester (AOR=1.79, 95%CI:3.926-9.406; p=0.013) were significantly associated with MCH follow up.

Conclusion and recommendation: From the drug prescribed, majority of pregnant women were taken antibiotics followed by 18(11.5%) NSAID, iron sulfate, and proton pump inhibitors. Among the dosage form, above half of the participants were taken the tablet dosage form followed by capsule and gels dosage form. Health care workers should have to brought good care for pregnant women, since they perhaps vulnerable to drug teratogenesity.

Keywords: pregnancy, teratogenicity, ante natal clinic, mettukarl referral hospital, Ethiopia
Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021

52% had used OTC medications during pregnancy. The use of OTC medications during pregnancy has been a concern for several reasons. One of the major concerns is the potential risk of drug interactions with other medications the mother might be taking. Another concern is the possibility of adverse effects to the developing fetus. Although OTC medications are generally considered safer than prescription medications, they can still pose risks when used during pregnancy.

The study conducted in Addis Ababa, Ethiopia, concluded that the use of OTC medications during pregnancy is widespread among pregnant women. The study found that 52% of the pregnant women had used at least one OTC medication during their pregnancy. This high usage rate underscores the need for better education and guidance on the appropriate use of OTC medications during pregnancy.

Prematurity is the most common cause of neonatal mortality. Even though there is a remarkable achievement observed in the reduction of under-five mortality rates, the reduction in mortality and morbidity in neonatal period is not as significant. Prematurity is a major cause of neonatal mortality. The presence of preterm birth, stillbirth, low birth weight, and a range of lifelong consequences can be seen following maternal overdose of paracetamol if treatment is delayed.

The study was conducted in MKRH, found in Mettu town, which is located 600 km away from Addis Ababa to the south west, Ethiopia. Mettu, located in the Illubabor Zone of the Oromia Region along the Sor River, this town has a latitude and longitude of 8°18'N 35°35'E and an altitude of 1605 m. The hospital can provide service for around 1.4 million clients. There are different wards and clinics within MKRH; those include internal medicine ward, surgery ward, pediatric ward, anti-retroviral therapy clinic and gynecology, obstetrics ward, Ante natal clinic, dental clinics, tuberculosis clinic, and ophthalmologic clinic. Regarding the delivery information, the average annual number of delivering mothers is estimated to be 3602.

Methodology

Study setting

The study was conducted in MKRH, located in Mettu town, which is situated 600 km away from Addis Ababa to the south west, Ethiopia. Mettu, located in the Illubabor Zone of Oromia Region along the Sor River, this town has a latitude and longitude of 8°18’N 35° 35’E and an altitude of 1605m. The hospital can provide service for around 1.4 million clients. There are different wards and clinics within MKRH; those include internal medicine ward, surgery ward, pediatric ward, anti-retroviral therapy clinic and gynecology, obstetrics ward, ante natal clinic, dental clinics, tuberculosis clinic, and ophthalmologic clinic. Regarding the delivery information, the average annual number of delivering mothers is estimated to be 3602.

Study participants, design, and sampling

A hospital-based cross-sectional study was conducted from April 13, 2021, to June 15, 2021, on three-month follow up of pregnant women attending maternal and child health clinic of MKRH during the data collection period & that fulfilled the inclusion criteria were the target population. All pregnant women, who visited MCH clinic greater than or equal two times in their gestational period. The prescribed drugs are clearly corresponds with the trimester were included in the study. Clients with less than 2 times visit in 270 days of pregnancy, self-medication drugs by pregnant women, i.e. drugs taken without prescription from the clinic.

Citation: Bereda G, Bereda G. Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021. Int J Pregn & Chi Birth. 2021;7(4):83- 90. DOI: 10.15406/ijpcb.2021.07.00234
documented order sheet on patient card. Pregnant women whose medical charts were incomplete were excluded. The sample size was determined by using the single population proportion formula: The sample size was determined based on “P” value which was taken from, northern Ethiopia, P=0.877, or 87.7. \( n = \frac{(z^2 \times p(1-p))}{d^2}, n=\text{sample size,} \)

\[ P=\text{prevalence of potential teratogenicity risk, } d=\text{margin of sampling error tolerate, } z=\text{the standard normal value at confidence interval of } 95\%. \]

\[ n = (1.96)^2 \times (1 - 0.877) \times (0.877) / (0.05)^2 = 166. \]

Since the total number of pregnant women visited MCH clinic was less than 10,000, reduction formula (correction formula) was applied as follow; \( n_f = n / [1 + (n / N)], n_f = 166 / [1 + (166 / 987)] = 142. \)

When 10% contingency is added to minimize non response rate, then final sample size was found to be 156. A systematic random sampling technique was applied to select the pregnant women’s follow up MCH by determining the sampling interval. Then, the first pregnant woman was selected by the lottery method from the pregnant women’s follow up MCH.

**Operational definitions**

ANC follow up: ANC visit of greater than one time in full pregnancy period.

Teratogens: Drugs administered during pregnancy, which can cause an intended effect on the fetus either before or after the delivery.

Parity: A condition of having carried a pregnancy to a point viability (a term used to indicate the number of pregnancies as woman has had resulted in birth).

Gravity: Refers to total numbers of pregnancies.

Pregnancy risk drug: Category D or Category X drug according to Food and Drug Administration (FDA) pregnancy risk classification.

FDA category C/D: Categorized as D above 30 weeks of pregnancy and category C otherwise.

Non FDA category medications: Drugs that are either in fixed dose of different category or single drugs that are not in clear category.

**Results**

Socio-demographic and socio-economic characteristics of the respondents

A total of 156 participants were interviewed; of whom, 81(51.9%) pregnant women were age between 20-35 years and a majority 113(72.4%) of them were married. A majority 92(59.0%) of patients were lived in rural area and 77(49.4%) were earn monthly income <1000 ETB. Above half 93(59.6%) of participants were uneducated (Table 1).

| Variables          | Category | Frequency | Percent |
|--------------------|----------|-----------|---------|
| Age                | <20 years| 44        | 28.2    |
|                    | 20-35 years| 81        | 51.9    |
|                    | >35 years | 31        | 19.9    |
| Residence          | Urban    | 92        | 59      |
|                    | Rural    | 64        | 41      |
| Monthly income     | <1000 ETB| 77        | 49.4    |
|                    | 1000-1500 ETB| 59    | 37.8    |
|                    | >1500 ETB | 20        | 12.8    |
| Marital status     | Married  | 113       | 72.4    |
|                    | Unmarried| 43        | 27.6    |
| Educational status | Educated | 63        | 40.4    |
|                    | Uneducated| 93        | 59.6    |

Pregnancy status of respondents

A majority 107(68.6%) of participants were multi gravidae and 66(42.3%) were have 1-3 children. Majority 57(36.5%) of respondents were second trimester, 7(49.4%) respondents were attend first ANC visit in second trimester, 59(37.8%) participants were have >5 times total numbers of ANC visit, 7(36.5%) were take medication during the second trimester. A majority 42(26.9%) of participants whose taken birth control pills followed by 39(25.0%) depopovera/implant (Table 2).
Table 2 Pregnancy status of pregnant women attending MCH, MKRH, Southwestern, Ethiopia (n=156)

| Variables                      | Category          | Frequency | Percent |
|--------------------------------|-------------------|-----------|---------|
| Gravidae                       | Prime gravidae    | 49        | 31.4    |
|                                | Multi gravidae    | 107       | 68.6    |
| Trimester                      | Unknown           | 20        | 12.8    |
|                                | First trimester   | 43        | 27.6    |
|                                | Second trimester  | 57        | 36.5    |
|                                | Third trimester   | 36        | 23.1    |
| Time of first ANC visit        | In first trimester| 25        | 16      |
|                                | In second trimester| 70       | 44.9    |
|                                | In third trimester| 61        | 39.1    |
| Total numbers of ANC visit     | Two times         | 41        | 26.3    |
|                                | 3-5 times         | 56        | 35.9    |
|                                | >5 times          | 59        | 37.8    |
| The trimester during drug administration | First trimester | 53        | 34      |
|                                | Second trimester  | 57        | 36.5    |
|                                | Third trimester   | 46        | 29.5    |
| Parity                         | Nulli-para        | 58        | 37.2    |
|                                | 1-3 children      | 66        | 42.3    |
|                                | >3 children       | 32        | 20.5    |
| Family planning                | Condoms           | 38        | 24.4    |
|                                | Birth control pills | 42     | 26.9    |
|                                | Depo provera/Implant | 39     | 25      |
|                                | Others            | 37        | 23.7    |

Medical conditions among pregnant women

Among medical condition majority 40(25.6%) of the participants had peptic ulcer disease and 26(16.7%) urinary tract infections followed by 20(12.8%) acute febrile illness and 12(7.7%) hyperemesis. Less 6(3.8%) of the participants were have seizure followed by 4(2.6%) diarrhea and 3(1.9%) HIV/AIDS (Table 3).

Table 3 Medical conditions among pregnant women attending MCH, MKRH, Southwestern, Ethiopia (n=156)

| Variables             | Category     | Frequency | Percent |
|-----------------------|--------------|-----------|---------|
| Medical condition     | PUD          | 40        | 25.6    |
|                       | UTI          | 26        | 16.7    |
|                       | Hyper-emesis | 12        | 7.7     |
|                       | Diarrhea     | 4         | 2.6     |
|                       | CAP          | 11        | 7.1     |
|                       | Asthma       | 9         | 5.8     |
|                       | Acute illness| 20        | 12.8    |
|                       | Epilepsy     | 6         | 3.8     |
|                       | HIV/AIDS     | 3         | 1.9     |
|                       | Abdominal discomfort | 9 | 5.8 |
|                       | Others       | 16        | 10.3    |

Citation: Bereda G, Bereda G. Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021. Int J Preg & Chi Birth. 2021;7(4):83-90. DOI: 10.15406/ipcb.2021.07.00234
Commonly prescribed medication in pregnant women

From the drug prescribed, majority 21 (13.5%) were take antibiotics followed by 18 (11.5%) NSAID, iron sulfate, and proton pump inhibitors. Only 9 (5.8%) of the respondents have taken metronidazole followed by combined cough syrup 6 (3.8%) and metochlopromide 3 (1.9%) (Table 4).

| Variables | Category | Frequency | Percent |
|-----------|----------|-----------|---------|
| Drug condition | NSAID | 18 | 11.5 |
| | Antibiotics | 21 | 13.5 |
| | Vitamins | 12 | 7.7 |
| | Folic acid | 13 | 8.7 |
| | Iron sulfate | 18 | 11.5 |
| | Paracetamol | 17 | 10.9 |
| | Metronidazole | 9 | 6.0 |
| | Antacids | 18 | 11.5 |
| | Metochlopromide | 3 | 1.9 |
| | Proton pump inhibitors | 18 | 11.5 |
| | Combined cough syrup | 6 | 3.9 |
| | Others | 2 | 1.4 |

Dosage form and route of administration in pregnant women

Among the dosage form, above half 80 (51.3%) of the participants were take the tablet dosage form followed by 21 (13.5%) capsule and 20 (12.8%) gels dosage form. Least 3 (1.9%) of respondents were have take vaginal cream followed by 2 (1.3%) of the participants have taken solution. Among route of administration, 67 (42.9%) of the participants were most commonly used PO followed by 33 (21.2%) of the participants have taken IM and 18 (11.5%) IV route of administration. Only 5 (3.2%) of the participants have taken rectal route of administration (Table 5).

| Variables | Category | Frequency | Percent |
|-----------|----------|-----------|---------|
| Dosage form | Syrup | 13 | 8.3 |
| | Tablet | 80 | 51.3 |
| | Capsule | 21 | 13.5 |
| | Gels | 20 | 12.8 |
| | Vaginal cream | 3 | 1.9 |
| | Ointment | 9 | 5.8 |
| | Solution | 2 | 1.3 |
| | Suppositories | 8 | 5.1 |

FDA category in pregnant women

Among the total medication prescribed for pregnant women FDA category C was the commonly 30 (19.2%) prescribed medication to pregnant women followed by 29 (18.6%) FDA category B and 26 (16.7%) FDA category D. 23 (14.7%) medication prescribed were FDA category A. Only 10 (6.4%) of participants have taken FDA category X and 5 (3.2%) were take Non FDA category (Table 6).

| Variables | Category | Frequency | Percent |
|-----------|----------|-----------|---------|
| Route of administration | PO | 67 | 42.9 |
| | IM | 33 | 21.2 |
| | IV | 18 | 11.5 |
| | Topical | 14 | 9 |
| | Vaginal | 13 | 8.3 |
| | SC | 6 | 3.8 |
| | Rectal | 5 | 3.2 |

FDA category of medications prescribed to pregnant women

According to US FDA drug category classifications, majority of minerals and vitamins such as Ferrous sulphate, magnesium sulfate injection, and folic acid, vitamin B1/6 were prescribed to the pregnant women under FDA category A. Majority FDA category drugs were Amoxacillin, diphenhydramine, erythromycin, acetaminophen, NP H insulin, and regular insulin. Drugs prescribed under category C to the pregnant women were Cotrimoxazole, loratidin e, cetirizine, gaufenesin, glyburide, tramadol, atropi ne, pneumococcal-vaccine, omeprazole. A majority of drugs prescribed under category D in pregnant women were Gentamycin, phenytin, phenobarbital, lorazepam, doxycy cline, and diazepam. From category X drugs prescribed drugs misoprostol was the mostly prescribed to pregnant women. Five medications were not classified under US FDA dug category were Hydrogen peroxide, maintenance fluids, benzocaine, combined cough syrup, calcium iodide syrup (Table 7).
Table 7 FDA category of drugs prescribed to pregnant women attending MCH, MKRH, South western, Ethiopia (n=156)

| FDA drug category | n(%) | Representative medications |
|-------------------|------|---------------------------|
| A                 | 23(14.7) | Saline nasal spray, Ferrous sulphate, magnesium sulfate injection, levothyroxine, folic acid, vitamin B 1/6, liothyronine, dextromethorphan |
| A/C               | 9(5.8)   | Vitamin B complex, Magnesium trisilicate |
| B                 | 29(18.6) | Ampicillin, diphenhydramine, erythromycin, acetaminophen, NPH insulin, Regular insulin, metformin, chlorpheniramine, clindamycin, metronidazole, cephalexin |
| C                 | 30(19.2) | Cotrimoxazole, loratidine, cetrizine, gaufenesin, glyburide, tramadol, pneumococcal-vaccine, atropine, omeprazole, bisacodyl, Dexamethasone eye ointment, vitamin K |
| D                 | 26(16.7) | Gentamycin, phenytoin, phenobarbital, lorazepam, doxycycline, diazepam |
| C/D               | 24(15.4) | Morphine, fentanyl, triamcinolone, codeine, ibuprofen, aspirin |
| X                 | 10(6.4)   | Ergotamine, misoprostol, estrogen, atorvastatin, oral contraceptive pills |
| Non FDA category  | 5(3.2)   | Hydrogen peroxide, maintenance fluids, benzocaine, combined cough syrup, calcium iodide syrup |

Factors associated with MCH follow up during pregnancy

Bivariate logistic regression analysis was conducted to identify women who were more likely to follow MCH during pregnancy. Pregnant women whose age > 35 years were 2.72 times more likely to follow MCH (AOR=2.72, 95%CI=2.524-3.927, p=0.001) than their counterparts. Urban residents were 4.05 times more likely to follow MCH (AOR=4.05, 95%CI=3.926-9.406, p=0.035) than rural residents pregnant women. Pregnant women during second trimester were 1.79 times more likely to follow MCH (AOR=1.79, 95%CI=1.537-2.163, p=0.013) than left trimester (Table 8).

Table 8 Factors associated with MCH follow up during pregnancy among women attending MCH, MKRH, South western, Ethiopia (n=156)

| Variables | Category          | n(%) | AOR (95% C.I)       | P-value |
|-----------|-------------------|------|---------------------|---------|
| Age       | <20 years         | 44(28.2) | Ref                 |         |
|           | 20-35 years       | 81(51.9) | 1.45(1.274-1.903)   | 0.074   |
|           | >35 years         | 31(19.9) | 2.72(2.524-3.927)   | 0.001   |
| Residency | Rural             | 64(41.0) | Ref                 |         |
|           | Urban             | 92(59.0) | 4.05(3.926-9.406)   | 0.035   |
| Educational status | Educated | 63(72.4) | Ref                 |         |
|           | Uneducated        | 93(27.6) | 1.29(1.048-1.949)   | 0.096   |
| Trimeter  | Unknown           | 20(12.8) | Ref                 |         |
|           | First trimester   | 43(27.6) | 0.73(0.094-1.105)   | 0.46    |
|           | Second trimester  | 57(36.5) | 1.79(1.537-2.163)   | 0.013   |
|           | Third trimester   | 36(23.1) | 1.13(1.025-1.278)   | 0.45    |

Discussion

Pregnant women have been often excluded from clinical trials and evidences generated from animal-based studies are not often suitable for extrapolation to indicate teratogenicity in humans. Hence, drug use by pregnant women is considered experimental in most clinical practices. However, the use of medications is sometimes mandatory in the treatment of women of reproductive age, breast feeding and during pregnancy. In our study a total of 168 participants were interviewed; of whom, 81(51.9%) patients were age between 20-35 years were higher than consistent with the study done at a tertiary care hospital in Puducherry, which revealed among 365 pregnant women attending antenatal clinic, 43% were in age group of 22 to 25 years which represents the normal reproductive age group. This difference was due to participants age classification category. Our study was consistent with the study employed in General Hospital, Abeokuta which showed majority of the 369 pregnant women that participated in the study were between the ages of 20-39 with a mean age of 29.65. Because women can get pregnant and bear children from puberty when they start getting their menstrual period to menopause when they stop getting it. Based on our age category classifications 20-35 years were the most reproductive ages.

The present study revealed majority of respondents were have second trimester, first trimester, third trimester were 57(36.5%),...
Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021

43(27.6%) and 36(23.1%) respectively were higher than the survey done in Ayder Referral Hospital which in first, second and third trimester is 8.30%, 9.20% and 82.5% respectively. Because our study conducted at maternal and child care clinic so majority of respondents came at the 2nd trimester. Our study was in line with the study conducted in India majority of patients in the study were in second trimester of gestation followed by third trimester and first trimester. This was due to during 2nd trimester pregnant women experienced dizziness and lightheadedness due to lower blood pressure, swelling of ankles or hands and skin changes, like darkening of the skin around the nipples.

The current study revealed 57(36.5%), 53(34.0%) and 46(29.5%) were take medication during the second trimester, first trimester, and third trimester respectively were somewhat consistent with the survey conducted in Hivod Fana Specialized Teaching Hospital revealed that drugs were prescribed in this study during all pregnancy trimesters. Accordingly, 24.1% were prescribed in first trimester and 29.1 and 31.6% were prescribed in second and third trimester, respectively; while, 15.2% were prescribed in unknown pregnancy trimesters. Because in 2nd trimester the pregnant women feel body aches, extreme swelling and rapid weight gain, which made the women visit the health centre.

In our study from the drug prescribed, majority 21(13.5%) were take antibiotics followed by 18(11.5%) were take NSAID, iron sulfate, and proton pump inhibitors were in line with the study conducted in a tertiary hospital in eastern Ethiopia showed that antibiotics were the most utilized medications from non-supplemental drugs. Because UTI was more common in pregnant women so antibiotics were prescribed to manage the infections cove bacterial infections.

Our study showed among medical condition majority 40(25.6%) of the participants had peptic ulcer disease and 26(16.7%) were have urinary tract infections followed by 20(12.8%) were have acute illness and 12(7.7%) had hyper-emesis were consistent with the study conducted in Fiche Hospital showed that from the dosage forms prescribed for pregnant women tablets are highly used across all trimester, followed by solution, capsules, syrup, and ointment. Injectable products were also frequently used in all trimester gestation's, commonly administered via intravenous route. Due to during follow up majority medication were oral route of administration (tablet or syrup).

The current study showed that Among the dosage form, above half 80(51.3%) of the participants were take the tablet dosage form followed by 21(13.5%) have taken capsule dosage form and 20(12.8%) have taken gels were somewhat inline with the study employed in Nekemte Referral Hospital showed that from the dosage forms prescribed for pregnant women tablets are highly used across all trimester, followed by solution, capsules, syrup, and ointment. Bivariate logistic regression analysis was conducted to identify women who were more likely to follow MCH during pregnancy. Pregnant women whose age > 35 years were (AOR=2.72, 95%CI=2.524-3.927, p=0.001) 2.72 times more likely to follow MCH than their counter parts. Urban residents were (AOR=4.05, 95%CI=3.926-9.406, p=0.005) 4.05 times more likely to follow MCH than rural residents pregnant women, pregnant women during second trimester were (AOR=1.79, 95%CI=1.537-2.163, p=0.013) 1.79 times more likely to follow MCH than left trimester.

Conclusion and recommendations

A majority of respondents were have second trimester, respondents were have first ANC visit in second trimester, participants were have greater than five times total numbers of ANC visit, were take medication during the second trimester. Among the dosage form, above half of the participants were take the tablet dosage form followed by have taken capsule dosage form and have taken gels. Among the total drugs prescribed for pregnant women FDA category D namely gentamycin, phenobarbital and doxycycline and S(3.2%) FDA category X namely atorvastatin and misoprostol were higher than the survey employed in Ayder referral hospital showed that among the total drugs prescribed during ANC, 2% were category D, namely tetracycline and doxycycline and categories X drugs (2%) prescribed in the second and third trimester. The drugs were misoprostol (to terminate pregnancy) and oxytocin (to induce labor). The difference were due to more medication prescribed to pregnant women with out identified pregnancy trimester.

According to the US-FDA risk classification of drugs, among the total drugs prescribed for pregnant women in study were not securely comprehend by the majority health care workers, so they prescribed medication of category B and C mostly.

Our study showed from route of administration, 67(42.9%) of the participants were mostly commonly used PO followed by 33(21.2%) of the participants have taken IM and 18(11.5%) have taken IV route of administration were consistent with the survey conducted in Fiche Hospital showed oral dosage form was the main dosage form used across all trimesters (75.22%) as it is the simplest and easiest way for any patient to take a medication. Injectable products were also frequently used in all trimester gestation’s, commonly administered via intravenous route. Because oral route administration was common tablet dosage perhaps highly given to pregnant women.

Bivariate logistic regression analysis was conducted to identify women who were more likely to follow MCH during pregnancy. Pregnant women whose age > 35 years were (AOR=2.72, 95%CI=2.524-3.927, p=0.001) 2.72 times more likely to follow MCH than their counter parts. Urban residents were (AOR=4.05, 95%CI=3.926-9.406, p=0.005) 4.05 times more likely to follow MCH than rural residents pregnant women, pregnant women during second trimester were (AOR=1.79, 95%CI=1.537-2.163, p=0.013) 1.79 times more likely to follow MCH than left trimester.

Ethical clearance

Prior to the commencement of the study, ethical clearance was obtained from SWAN diagnostic pharmaceutical importer. Behind the scenes was maintained by anonymous questionnaire or the patient’s medical card was secured by not using their names during data collection.

Acknowledgments

We extend our gratitude to data collectors and study subjects.

Conflicts of interest

We have no conflict of interest in this article.

Citation: Bereda G, Bereda G. Drug usage pattern and potential teratogenesity risk among pregnant women attending maternal and child health clinic of Mettu Karl Referral Hospital, South Western, Ethiopia: a cross sectional study, 2021. Int J Preg & Chi Birth. 2021;7(4):83-90. DOI: 10.15406/ipcb.2021.07.00234
References

1. Lynch MM, Squiers LB, Kosa KM, et al. Making decisions about medication use during pregnancy: implications for communication strategies. *Matern Child Health J*. 2018;22(1):92–100.

2. Bakker MK, Jentik J, Vroom F. Drug prescription patterns before, during and after pregnancy for chronic, occasional and pregnancy related drugs in the Netherlands. *BJOG An International Journal of Obstetrics and Gynaecology*. 2006;113:559–568.

3. Kaplan YC. Drug use and/or exposure in pregnancy: Presence of risk versus quantit y of risk. *J Turkish Ger Gynecol Assoc*. 2015;16(2):123–123.

4. FDA pregnancy categories: FDA pregnancy risk information: an update 2000–2017.

5. Anonymous. Reviewer Guidance Evaluating the Risks of Drug Exposure in Human Pregancies. US Department of Health and Human Services, FDA Center for Drug Evaluation and Research (CDER), Center for Biologies Evaluation and Research (CBER). 2005.

6. Creizel AE. Drug exposure in pregnant women. *Lupus*. 2004;13:740–745.

7. Balasubramaniam J. Nimesulide and neonatal renal failure. *Lancet*. 2000;355(9203):575.

8. Van Gelder MMH, Roeleveld N, Nordeng H. Exposure to non–steroidal anti–inflammatory drugs during pregnancy and the risk of selected birth defects: a prospective cohort study. *PLoS ONE*. 2011;6:e22174.

9. Costantine MM. Physiologic and Pharmacokinetic changes in pregnancy. *Front Pharmacol*. 2014;5.

10. Fakyeo TO, Adisa R, Musa IE. Attitude and use of herbal medicines among pregnant women in Nigeria. *BMC Complement Altern Med*. 2009;9(53).

11. Shruti G, Sree PK, Rao YV. Drug use pattern of over–the–counter and alternative medications in pregnancy: A cross sectional descriptive study. *National Journal of Physiology,Pharmacy and Pharmacocogic*. 2015;5(3):195.

12. Sachdeva P, Patel BG, Patel BK. Drug use in pregnancy; a point to ponder. *Indian J Pharm Sci*. 2009;71:1–7.

13. Andersen AM, Andersen PK, Olsen J, et al. Moderate alcohol intake during pregnancy and risk of fetal death. *Int J Epidemiol*. 2012;41:405–413.

14. Ministry of Health. Health sector transformation plan. Addis Ababa; 2010:15:112.

15. Ministry of Health. Health sector transformation plan. Addis Ababa; 2015. p.23–31.

16. Selvaraj N, Sekar A, Gandhi R, et al. Drug utilization pattern in pregnancy at a tertiary care hospital in Puducherry:a cross sectional observational study. *Int J Basic Clin Pharmacol*. 2018;7:900–905.

17. Andrade SE, Davis RL, Cheetham TC, et al. Medication exposure in Pregnancy Risk Evaluation Program. *Matern Child Health J*. 2012;16(7):1349–1354.

18. Yates LM, Thomas SH. Prescribing medicines in pregnancy. *Medicine*. 2016;44(7):438–443.

19. Cohen MR. Medication errors: causes, prevention and risk managements. 2010;15:112.

20. Harsh J, Sejal Patel, K Patel, et al. Drug Use Pattern during Pregnancy: A Prospective Study at Tertiary Care Teaching Hospital NHL. *Journal of Medical Sciences*. 2012;1:15–2.

21. Bedewi N, Sisay M, Edessa D. Drug utilization pattern among pregnant women attending maternal and child health clinic of Hiwot Fana Specialized Teaching Hospital, Ethiopia. *Archives of Pharmacy Practice*. 2014;5(2).

22. Meles N Alemu, Semagn G, Melesse SH, et al. Patterns and determinants of prescribed drug use among pregnant women in Adigrat general hospital,northern Ethiopia:a cross–sectional study. *BMC Pregnancy and Childbirth*. 2020;20:624.

23. Kebbebe D, Kefadu G, Hinkossa C, Gebyeheyu H et al. Drug utilization pattern and potential teratogenicity risk in pregnant women;Nekemte referral hospital,East Wollega Zone, Oromia Regional State, Ethiopia. *JMPR*. 2018;2(4):42–51.