Reviewer's report

Title: Self-medication with Antibiotics for Menstrual Symptoms Among University Women in Southwest Nigeria: A Cross-sectional Study

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Reviewer: Inge Gyssens

Reviewer's report:

The manuscript describes a cross-sectional study on self-medication with antibiotics for menstrual symptoms among university students in Southwest Nigeria. The idea for the study emerged following a pilot study conducted by the first and last author (reference 15). In-depth interviews of 27 subjects revealed that students and young nurses were taking antibiotics for menstrual symptoms. The present study is conducted as a written survey on a large number of students in four universities. According to the abstract, the aim of the study was to determine the prevalence of self-medication with antibiotics for menstrual symptoms among university women in Southwest Nigeria and to understand the characteristics of women most likely to report this practice. The authors found that in this population, 74% of participants experienced menstrual symptoms, 39% reported using analgesics to treat these, and over 24% of participants reported self-medicated use of antibiotics. Up to 12 different antibiotics are cited. Ampicillin, tetracycline, ciprofloxacin and metronidazole were used to treat most symptoms. The authors conclude that this type of practice could provide monthly, low-dose exposures to antibiotics among users, and could partially explain the high rates of antibiotic resistant urinary tract infections previously described in Nigeria.

General/major comments

The design of this study was appropriate to reach a large population of the target group of university students. Some prevalence data and characteristics of young women were recorded. However, important epidemiological information to interpret the findings are missing. In particular, data are needed to estimate the size of the problem in the area. Also, no response rates are given.

Very little information is provided on some crucial methodological aspects of the survey, e.g. type and formulation of questions on antibiotics. The survey instrument should be uploaded as additional material to clarify the responses.

Regarding the third aim of the study (cited in the background section, not in the abstract), i.e. to identify the reasons for self-medication, the study does not provide a real clue. It seems that the in-depth interviews of the pilot study (reference 15) revealed more on this issue. However, the authors do not discuss their findings in the present manuscript.
Specific comments

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

Background

First paragraph.

1. There is too much text on antimicrobial resistance, in particular in non-African regions. Information on resistance should be focused on Nigeria/the area, UTI pathogens. I suggest to remove some text and references 3-11, 13, 16 on children or/and other developing countries and to keep references 1,2,12.

Second paragraph

2. This paragraph should also be shortened and focused on Nigeria. A more recent reference should replace reference 14 (dating from 1980!) to describe the (lack of) drug regulation in Nigeria.

Also, in order to give an overall picture, the problem of counterfeit drugs (containing no or substandard active ingredient) in Nigeria should be briefly mentioned and referenced.

Third paragraph

3. The findings of the pilot study (ref 15) leading to the present study should be explained in more detail, now only briefly mentioned in the method section lines 119-121.

Method

The study population and recruitment are well described. However, important elements are missing.

4. Please add the following information:
   • The total number of students at the 4 universities.
   • Proportion of female students.
   • The number of questionnaires distributed.
   • The characteristics of study personnel distributing the questionnaires/ the distribution method.
   • Selection of residence/lecture halls?
   • The proportion of refusals (allowing to calculate response rates).
   • Uploading the survey instrument should inform the reader on type of questions on antibiotics (open or close-ended)
   • Percentage replies on questions leading to calculation of prevalence and type of antibiotic use

As an example, please check the methodology section of a recent publication on the subject:

Ogunfowokan AA and Babatunde OA. Management of primary dysmenorrhea by

Results
Study population characteristics
5. The first line should give the response rate (% = 706 surveys returned out of xxx distributed). Any difference in response rates between the education levels?

Types of antibiotics used Line 205 and table 2.
I find it hard to believe that non-medical students would cite generic names of antibiotics in such detail. If the names of antibiotics were provided, e.g. a list of these generic names, it is also hard to believe that the students would recognize these products as those passed on by a friend or sister within the previous 3 months. The authors correctly allude to this problem in the limitations section of the discussion lines 300-303.

6. Uploading the survey instrument as additional material would provide this information.

Importance of the study Lines 230-233
It seems that this survey did not include questions on the frequency (every month?) or the duration of treatment (number of days)
7. Please confirm this. It has important implications, in particular whether the statement on the resistance threat caused by repeated courses is based on speculation or on data collected in the survey.

Sources of information and antibiotics Lines 217-222.
There is an important difference in training level of those who recommended the antibiotics: doctors or nurses and the providers (chemists or pharmacists).
8. Please give the numbers (together with percentages of responses to this question) of the different healthcare professionals who recommended the antibiotics and the providers separately.

Discussion
This section requires a major revision, based on the changes suggested for the introduction, methodology and results.

Importance of the study/ overall public health implications.
The young women studied represent only a small proportion (elite) of the female population.

9. Discuss to what extent these female university women are representative for
the women in the area, in Nigeria, in Africa? How large would the impact of the ecological pressure by the self-medication of university women be in the area, Nigeria, Africa?

Second paragraph
Resistance of UTI pathogens in Nigeria (lines 235-247) and spread (lines 258-272)
10. The sections are too long and contain too many references, as this manuscript does not contain any resistance data.

-Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

Results
Menstruation Lines 166-170
1. Why was the question on types of sanitary products included? (Only after reading ref 15, I understand why). The stage should be set in the background section.

2. The types of analgesics should be grouped according to active ingredient: paracetamol= acetaminophen. Advil = ibuprofen. Provide a uniform formulation, e.g. generic name of ingredient(s) lower case, (BRAND NAME) capitalized

The article by Ogunfowokan AA and Babatunde OA. Management of primary dysmenorrhea by school adolescents in Ile-Ife, Nigeria. The Journal of School Nursing, vol 26 no 2, April 2010 131-136 DOI: 10.1177/1059840509349723 provides interesting information on the topic in adolescents in the same area. According to this study, only 1% of the girls took only one type of antibiotic (tetracycline), and 63% were advised by their mothers.

Sources of information and antibiotics Lines 217-222.
3. How many times was an antibiotic actually prescribed for this indication?

Discussion Lines 272-282.
4. The authors could discuss the difference in prevalence of antibiotics for menstrual symptoms of their survey and the article on the adolescents. It could well be that antibiotics are fashionable in this group of university students – poorly advised by friends - and that the “fashion trend” has not (yet) spread to younger girls who are primarily advised on management by their mothers

Conclusion Lines 304-318.
5. The above cited reference offers some clues for hands-on interventions; for example, information campaigns at the universities

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests