# Self-medication among health care workers in a tertiary hospital in Southern Nigeria: knowledge, attitude, and practices

Ekaete Alice Tobin,[1] Jovita Erhazele,[2] Martha Okonofua,[1] Chinelo Nnadi,[3] Eucharia Ezenwanyi Nmema,[4] George Odigie[1]



pISSN: 0853-1773 • eISSN: 2252-8083
https://doi.org/10.13181/mji.oa.204223
**Med J Indones. 2020;29:403–9**

**Received:** September 25, 2019
**Accepted:** September 09, 2020

**Authors' affiliations:**
*[1]Institute of Lassa Fever Research and Control, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria, [2]Ambrose Ali University, Ekpoma, Edo State, Nigeria, [3]Department of Community Medicine, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria, [4]Department of Biological Sciences, Ondo State University of Science and Technology, Ondo State, Nigeria*

**Corresponding author:**
Ekaete Alice Tobin
Institute of Lassa Fever Research and Control, Km 87 Benin-Auchi road, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria
Tel/Fax: +234-815536812
**E-mail:** ekaete.tobin@gmail.com

**ABSTRACT**

**BACKGROUND** Self-medication is linked to the inappropriate and irrational use of medicines. This study aimed to determine the knowledge, attitude, and practice of self-medication among health care workers (HCWs) in a tertiary hospital in Southern Nigeria.

**METHODS** In a cross-sectional study carried out between June 2018 and December 2018 at Irrua Specialist Teaching Hospital, Edo State, 206 consenting HCWs were interviewed using validated questionnaires on their knowledge (assessed as good, fair, and poor), attitude (positive and negative), and practice of self-medication. Data analysis was performed using SPSS version 21 (IBM Corp., USA). Bivariate analysis was carried out using chi-square. Statistical significance was set as $p<0.05$.

**RESULTS** Prevalence of self-medication in the last 4 months was 89.3%, and significantly decreased with increasing age ($p = 0.04$) and holding a positive attitude toward self-medication ($p<0.01$). Knowledge of self-medication was fair for the majority 111 (53.9%). Most of the medications were used for headache (92.4%), fever (81.5%), diarrhea (75.0%), and respiratory infections (61.4%). Common drugs self-medicated included antimalarials (91.3%), analgesics (81.0%), and antibiotics (71.2%). 39 subjects (21.2%) self-medicated with tranquilizers. Familiarity with the treatment options was the main reason for self-medication for 60.9% of the respondents.

**CONCLUSIONS** Self-medication was prevalent among HCWs in the study area. Concerted efforts are needed to educate HCWs on responsible self-medication. On a broader scale, restrictions should be enforced on the sale of prescription drugs, such as antibiotics and sleeping pills, and drug dispensers should provide effective counseling before dispensing.

**KEYWORDS** health care workers, prevalence, self-medication

Self-medication describes the condition where non-prescription medications are used by an individual to treat self-diagnosed or self-recognized conditions without medical guidance, a doctor's prescription or follow-up.[1,2] Under the circumstance, individuals seek advice from family or friends, consume leftover drugs that were saved, and use prescriptions from previous medical encounters or those of others to buy the same drug that they had earlier found to be effective.

Drugs recommended for self-medication are specifically labeled for the general public's use without the supervision of trained medical doctors or other professionals and approved as safe and effective for such use.[3] As a component of self-care, responsible self-medication allows an individual to play an active role in decision-making regarding his or her own health care, reduces the burden on the health system especially in resource-poor settings, and enables better use of time of health care workers (HCWs).[4] Conversely, irrational self-medication carries the risk of delays in seeking medical advice, adverse reactions to the drugs, life-threatening drug interactions, masking of severe

disease, risk of dependence, and antibiotic resistance when antibiotics are misused.[4]

Self-medication occurs globally with prevalence rates varying across countries. Self-medication is prompted by several factors including the increasing supply of alternative medicines, availability and non-regulation of over-the-counter medications, and the media advertisement of pharmaceutical products.[5] The prevalence of self-medication practices is also high among HCWs, despite their knowledge of the potential risks of the practice.[5] HCWs have a greater tendency to engage in self-medication than the general population because of their privileged access to medical practitioner colleagues knowledge and access to medications in the workplace, a false sense of confidence in self-treatment, and a refusal to enter the "patient role."[6–8] Prevalence of self-medication was 77.6% among health professions in Malaysia,[5] 67.5% in Ethiopia,[7] 52.1% in South West Nigeria,[9] and 73.4% in Western Ethiopia.[10] Self-medication among HCWs is associated with unethical practices, the risk of misuse of addicting drugs, such as opiates and benzodiazepines, and untoward effects on the patient and quality of care delivered.[5,11,12]

Self-medication among HCWs is generally under-researched in low-income countries.[9] A few studies have been conducted in Nigeria among this occupational group,[9,11,12] and results are comparable with findings from similar studies from other regions. The study aimed to assess the knowledge, attitude, and practice of HCWs toward self-medication and understand the factors responsible for the practice. This information is necessary to guide the development of interventions to promote responsible self-medication among HCWs.

## METHODS

### Study area

This study was carried out in a tertiary hospital located in the Southern region of Nigeria. The 250-beds hospital provides comprehensive primary, secondary, and specialized health care services to the people of Edo and neighboring states. At the time of the study, the hospital had 1,430 clinical workers (doctors, nurses, laboratory scientists/technicians, pharmacists, and radiographers) and 191 non-clinical workers (administrative staff, laundry, ambulance drivers, hygienists, medical psychologists, nutritionists, and health record officers).

### Study population and design

The study utilized a cross-sectional design and was conducted between June and December 2018 among the clinical and non-clinical staff of the hospital. Sample size was calculated using the formula for a prevalence study[13] with *p* as the prevalence of self-medication practice among health professionals in a private university in Malaysia (77.6%),[5] a 95% confidence interval, and margin of error (d) as 5%. The final sample size was determined using the correction formula for populations <10,000. After adjusting for non-response, the sample size was set as 250.

### Selection criteria and sampling technique

All full-time clinical (nurses, laboratory scientists/technicians, pharmacists, physiotherapists, and radiographers) and non-clinical (administrative staff, laundry, ambulance drivers, hygienists, medical psychologists, nutritionists, and health record officers) staff who were willing to consent and were present during the study period were eligible to participate. Medical doctors and those who were on leave during the study were excluded from the study. Respondents were selected through a two-stage random sampling process that included proportional allocation of the sample size to the departments based on their population, and simple random sampling within the departments to select respondents.

### Study instrument

Data were collected using a structured English language self-administered questionnaire that was designed by the researchers following an extensive literature review process and subjected to face and content validity by a group of local experts. This consultation process led to redrafting and re-organizing items in the questionnaire.

The questionnaire contained four sections on sociodemographic characteristics, general knowledge of self-medication, attitude, and practice of self-medication. Ten questions examined the respondents' knowledge of self-medication. Knowledge included the definition, situations where self-medication was permitted, benefits, and dangers of self-medication. A score of one was assigned to a correct response and zero to an incorrect response.[14] Knowledge was graded as good, fair, or poor depending on whether the final score of the respondent fell within >75%, 50–75%, or <50% of the total score of 10, respectively.

Five questions set in Likert style with responses as "strongly agree," "agree," "uncertain," "strongly disagree," and "disagree" were used to assess the attitude toward self-medication. Questions included self-confidence in self-diagnosis and treatment of self-reported illness, obligation to consult a physician when unwell, risk of harm from self-medication, and opinion on self-medication restricted to HCWs.

For analysis, response scoring was performed by assigning a score of "4" to a response that should be "strongly disagree" if the response is correct, "3" for "disagree," "0" for "not sure," "2" for "agree," and "1" for "strongly agree." Reverse score marking was conducted for a negative statement. For attitude, a negative grade was assigned to the respondent if his/her total score for attitude fell <50% of the total score expected and positive if ≥50%.

A respondent was said to have self-medicated if he/she gave a "yes" response to the question "have you taken medicines in the last 4 months without the prescription of a doctor?". The questionnaire also collected information on the type of ailments for which treatment was sought, names of drugs consumed and source of drug information, reasons for self-medication, occurrence(s) of adverse drug events, and actions. Reliability was calculated using Cronbach's α as >0.7 for all items of the questionnaire. Pre-testing was carried out among 30 HCWs employed in a government-owned secondary health facility in the district. Research assistants were final-year medical students who underwent 1-day training on the basic techniques of consenting and questionnaire administration.

**Study variables**

The dependent variable in this study was self-medication practice. Independent variables included sociodemographic qualities, knowledge of self-medication, and attitude toward self-medication.

**Data analysis**

Statistical analysis was performed using SPSS version 21 (IBM Corp., USA). Descriptive data were presented as percentages, and mean and standard deviation (SD) were used to summarize quantitative data. The outcome variable, practice of self-medication, was tested in bivariate analysis with chi-square test against exposure variables of knowledge, attitude, and sociodemographic qualities. Statistical significance was considered at $p<0.05$.

**Ethical considerations**

Approval was obtained from the Health Research Ethics Committee of Irrua Specialist Teaching Hospital (No: ISTH/HREC/20180704/68), and written informed consent obtained from all participants after the nature of the study, participation status, benefit of the study, and confidentiality issue were explained and understood. All information from the study was recorded anonymously and confidentiality assured throughout the study.

## RESULTS

There were 206 questionnaires that were returned giving a response rate of 82.4%. The mean (SD) age of the respondents was 36.5 (8.5) years. Other demographic qualities of the respondents are shown in Table 1. More than half of the respondents could correctly define self-medication. Most of the respondents (n = 164, 79,6%) were aware of current modalities of home management of malaria. A minority of subjects (n = 137, 66.5%) were aware that common cold should not be treated with antibiotics, whereas 138 subjects (67%) and 159 subjects (77.2%) were aware that anti-hypertensives and anti-diabetics require consultation with a physician to review prescriptions during treatment, respectively. The 'three times a day' timing of medication was incorrectly described as morning, afternoon, and evening by 99 (48.1%) respondents, and 119 (57.8%) opined that medication for arthritis could be taken on an empty stomach.

The most common reason given for self-medication was cost saving (n = 100, 48.6%). Others were for a quick relief of symptoms (n = 44, 21.4%), convenience (n = 27, 13.1%), time saving (n = 6, 2.9%), effectiveness (n = 6, 2.9%), removes the need for a hospital visit (n = 5, 2.5%), and early/initial relief of symptoms (n = 3, 1.5%). Overdose or underdose was cited by the majority (36.9%) as the dangers of self-medication. Others were damage to internal organs (n = 14, 6.8%) and death (n = 33, 16%). About 7.3% of the respondents could not mention any untoward effect of self-medication.

More than half of the respondents (n = 111, 53.9%) had fair knowledge of self-medication, and 26 (12.6%) had good knowledge. The majority of respondents felt no obligation to consult a doctor when ill (n = 133, 64.6%), were confident in their ability to recognize disease symptoms (n = 104, 50.5%) and treat appropriately (n =

**Table 1.** Sociodemographic characteristics

| Variable | n (%) (N = 206) |
|---|---|
| Occupation | |
| Clinical | 53 (25.7) |
| Nurses | 84 (40.8) |
| Support staff | 21 (10.2) |
| Administrative staff | 25 (12.1) |
| Other allied HCWs | 23 (11.2) |
| Marital status | |
| Single | 68 (33.0) |
| Married | 129 (62.6) |
| Others* | 9 (4.4) |
| Male sex | 95 (46.1) |
| Age group (years) | |
| ≤29 | 51 (24.8) |
| 30–39 | 77 (37.4) |
| 40–49 | 51 (27.2) |
| ≥50 | 21 (10.2) |
| Duration of working years | |
| <1 | 22 (10.7) |
| 1–10 | 141 (68.4) |
| 11–20 | 31 (15.0) |
| ≥21 | 12 (5.8) |
| Religion | |
| Christianity | 181 (87.9) |
| Islam | 22 (10.7) |
| Others† | 3 (1.4) |

*Divorced, widowed; †atheist, traditional African religion

128, 62.1%) and 133 (64.6%) did not perceive themselves to be at any risk from self-medication. However, 101 (49.0%) opined that self-medication should not be the prerogative of HCWs. Overall, 111 (53.9%) respondents were positively disposed toward self-medication, while 95 (46.1%) had negative attitudes toward the practice.

One hundred and eighty-four (89.3%) respondents had self-medicated in the last 4 months. Drugs self-medicated, symptoms for which self-medication was sought, sources of drugs, and sources of information regarding drugs are presented in Table 2. The main reason given by 112 (60.9%) for self-medication was familiarity with the treatment option. Other reasons were lack of time to see a doctor (n = 96, 52.2%), perceptions that the symptoms are not severe enough to warrant a clinic visit (n = 63, 34.2%), financial constraints (n = 27, 14.7%), non-favorable appointment times (n = 6, 3.3%), and the attitude of fellow HCW at clinical units (n = 20, 10.9%). Fifty-eight (31.5%) respondents had experienced a side effect from self-medication, and the most notable mentioned by the

**Table 2.** Pattern of self-medication among respondents

| Variable | n (%) (N = 184) |
|---|---|
| Common drugs self-medicated* | |
| Anti-malaria | 168 (91.3) |
| Analgesics | 149 (81.0) |
| Antibiotics | 131 (71.2) |
| Cold/catarrh remedies | 145 (78.8) |
| Worm expellant | 82 (44.6) |
| Anti-ulcer | 56 (30.4) |
| Anti-hypertensive | 40 (21.7) |
| Sleeping pills | 39 (21.2) |
| Anti-diabetics | 22 (12.0) |
| Symptoms for which treatment was obtained | |
| Headache | 170 (92.4) |
| Fever | 150 (81.5) |
| Arthritic pains/body pains | 138 (75.0) |
| Cold/catarrh | 113 (61.4) |
| Sorethroat | 108 (58.7) |
| Heartburn | 63 (34.2) |
| Eye and ear problem | 33 (17.9) |
| Constipation | 22 (12.0) |
| Diarrhea | 19 (10.3) |
| Rashes/allergy | 12 (6.5) |
| Vomiting/nausea | 8 (4.3) |
| Others† | 9 (4.9) |
| Common source of drugs | |
| Private pharmacy | 67 (36.4) |
| Chemist/patent medicine store | 60 (32.6) |
| Leftover at home | 53 (28.8) |
| Others‡ | 4 (2.2) |
| Source of information about drugs | |
| Retail pharmacist/chemist | 59 (32.1) |
| HCWs | 32 (17.4) |
| Experience | 29 (15.8) |
| Patent medicine dealer | 18 (9.8) |
| Friends | 14 (7.6) |
| Family members | 13 (7.1) |
| Internet | 10 (5.4) |
| Journal articles | 8 (4.3) |
| Drug package insert | 1 (0.5) |

*Multiple responses; †poor sleep, body weakness; ‡online ordering, family, or friends

**Table 3.** Sociodemographic factors associated with self-medication

| Variable | Practice of self-medication | | *p* |
|---|---|---|---|
| | Yes, n (%) (N = 184) | No, n (%) (N = 22) | |
| Occupation | | | 0.16 |
| Clinical | 45 (24.4) | 8 (36.4) | |
| Nurses | 80 (43.5) | 4 (18.2) | |
| Support staff | 19 (10.3) | 2 (9.1) | |
| Administrative staff | 20 (10.9) | 5 (22.7) | |
| Allied HCWs | 20 (10.9) | 3 (13.6) | |
| Marital status | | | 0.52 |
| Single | 61 (33.2) | 7 (31.8) | |
| Married | 116 (63.0) | 13 (50.9) | |
| Others* | 7 (3.8) | 2 (9.1) | |
| Male sex | 84 (45.7) | 11 (50.0) | 0.70 |
| Age group (years) | | | **0.04** |
| ≤29 | 46 (25.0) | 5 (22.7) | |
| 30–39 | 70 (38.0) | 7 (31.8) | |
| 40–49 | 53 (28.8) | 4 (18.2) | |
| ≥50 | 15 (8.2) | 6 (27.3) | |
| Duration of working years | | | 0.44 |
| <1 | 19 (10.3) | 3 (13.6) | |
| 1–10 | 127 (69.0) | 14 (63.6) | |
| 11–20 | 26 (14.1) | 5 (22.7) | |
| ≥21 | 12 (6.5) | 0 (0) | |
| Religion | | | 0.93 |
| Christianity | 161 (87.5) | 20 (90.9) | |
| Islam | 20 (10.9) | 2 (9.1) | |
| Others‡ | 3 (1.6) | 0 (0) | |
| Knowledge | | | 0.70 |
| Poor | 60 (32.7) | 9 (40.9) | |
| Fair | 100 (54.3) | 11 (50.0) | |
| Good | 24 (13.0) | 2 (9.1) | |
| Positive attitude toward self-medication | 109 (59.2) | 2 (9.1) | **<0.001** |

*Divorced, widowed; significant $p<0.05$; †atheist, traditional African religion

majority was nausea and vomiting (n = 36, 62.1%). Thirty-seven (63.8%) of the respondents who experienced a side effect consulted a health professional, 12 (20.7%) first went for a lab test, 2 (3.4%) changed the dose of the drug, 2 (3.4%) changed to another drug, and 3 (5.2%) resorted to herbal preparations. Two (3.4%) took no action.

Self-medication in the past 4 months declined significantly in respondents older than 50 years ($p$ = 0.04). Marital status, sex, duration of work, designation, and religion were not significantly associated with self-medication. Practice was significantly higher among respondents who held a positive attitude (n = 109, 98.2%) toward self-medication than those with a negative attitude toward the practice (n = 75, 78.9%) ($p<0.001$) (Table 3).

## DISCUSSION

Knowledge of self-medication was fair for the majority, which was similar with a study in India[15] and Ethiopia[16] but was different with a study carried out in South West Nigeria,[9] where knowledge level was found to be low. These differences may be due to differences in professional training and exposure to drug information from several sources, including the internet and promotional advertisements from pharmaceutical companies.[15] The gaps in knowledge regarding the management of hypertension and diabetes mellitus observed among one-third of the respondents are reflected in the high proportion of respondents who self-medicated with anti-hypertensives and anti-diabetic drugs. This result is in sharp contrast to a study in Northern Tanzania where the prevalence of self-medication with anti-hypertensives and anti-diabetic drugs was 0.6%.[17] Such ignorance may result in poor attendance at hypertensive and diabetic follow-up clinics, missed appointments, and poor outcomes of treatment. These misconceptions should be addressed through individualized health education and counseling session during screening clinics, well-person's clinics, and medical specialty clinics. The misunderstanding of the timing of drug administration in this study reflects a desire to tailor one's drug regimens to fit into daily life. However, incorrect drug timing carries the danger of sub-therapeutic dosing, medication errors, and poor outcomes. This should be addressed by ensuring that dispensers adopt a practice of counseling and clearly writing out drug instructions for their clients/patients, considering that pharmacists are the most common source of drug information for the majority.

The higher number of respondents with a positive attitude toward self-medication is in tandem with previously published studies[5,16] and in contrast to others.[18] The observed low perception of risk of harm

from self-medication among the majority may result from ignorance of the dangers of the practice and agrees with the observation that only few respondents were able to mention the dangers of self-medication. The occurrence of any side effect from self-medication was also low and contributes to the low perception of risk among respondents. The need to address the attitude of HCWs toward responsible self-medication cannot be overemphasized because respondents who had positive attitudes toward self-medication were significantly more likely to indulge in it than those who had negative attitudes.

A high prevalence of self-medication was found among HCWs in the study area, as has been reported in other studies involving HCWs from other parts of the world, ranging from 77.6–100%.[5,10] By contrast, lower rates of self-medication practice were recorded among nurses in Rio de Janeiro (24.7%)[2] and health sciences students in Ethiopia (58.4%)[16] probably because these studies were carried out among persons who were still in school and therefore may not be competent enough to self-prescribe.

Familiarity with the treatment was the most common reason given for self-medication, as has been documented previously.[5,19] This finding is understandable because the common symptoms for which treatment was instituted were fever and headache, symptoms commonly associated with malaria. A similar pattern has been reported in a study carried out in United Arab Emirates.[20] Therefore, the common drugs self-medicated were analgesics and antimalarials. Interestingly, majority of the respondents were aware that malaria can be treated at home. This awareness may be from better access to malaria treatment information by virtue of their work in a health care facility. However, treatment should follow a positive laboratory test because of the risk of developing resistance to malaria drugs.

The high prevalence of self-medication with antibiotics in this study agrees with the report of some studies[8,16] that antibiotics can be obtained without a prescription but disagrees with the finding of other studies that the use of antibiotics for self-medication is low.[2,16] The incorrect notion held by most respondents that antibiotics can be used for the treatment of common colds should be addressed through health education and stricter enforcement of regulations that restrict the sale of antibiotics without a prescription. The high prevalence of the use of sleeping pills[2] is also worrisome and may reflect a high stress level among HCWs.

Interestingly, the retail pharmacy was not only the most common place where drugs were brought, but also the most common source for drug information. This finding is expected because drugs cannot be purchased at the hospital pharmacy without a prescription. However, it emphasizes the role the drug retailer must play in encouraging responsible self-medication and discouraging the sale of prescription drugs. The lack of time to see the doctor was also mentioned as a reason for self-medication and similarly noted in a previous study.[20] This observation requires further investigation by managers of health institutions because staff in a health institution should seek medical care when sick. The self-report of having an adverse drug effect in this study may be the result of a mismatch in the drug combinations because the drug stores in the study area commonly sell a cocktail of drugs based on the patient's complaints or particular requests.

The relationship of self-medication practice with sociodemographic variables of sex, age, occupation, religion, marital status, and duration of working years was tested. Age was the only sociodemographic variable found to have any significant association with the practice of self-medication, with a decline noted in respondents older than 50 years. This result is contrary to studies where older[9] and younger[2,17] individuals were significantly associated with self-medication. This observation may be due to the greater health consciousness among the older study participants.[21] Other studies found significantly higher rates of self-medication among single respondents,[7] those with high levels of education, <3 years of graduation,[22] females,[10] and those with <5 years of work experience.[10]

The limitations of this study are using a cross-sectional design that examines exposure and outcome at the same point in time, making causal relationships between dependent and independent variables difficult to establish. Meanwhile, studying the associations of various factors with self-medication provides a framework for which studies to establish causality can be planned. The responses to the questionnaire were generally based on self-report and therefore are subject to over- or under-reporting. The study relied on a 4-month recall period, which might introduce recall bias. However, this scenario

was mitigated to an extent using a simple and easily comprehensible questionnaire.

In conclusion, the practice of self-medication was high with common drugs consumed being analgesics, antimalarials, and antibiotics, and a small percentage misusing sleep medication. Considerable gaps in knowledge and attitude toward self-medication were identified. The study highlights the need for the supervisors of health facilities to institute programs to promote responsible self-medication through improving knowledge that will lead to attitude change. On a broader scale, restriction on the sale of prescription drugs, such as antibiotics and sleeping pills, needs to be enforced.

**Conflicts of Interest**

The authors affirm no conflict of interest in this study.

**Acknowledgment**

The authors wish to thank the research assistants.

**Funding Sources**

None.

## REFERENCES

1. Koinis A, Giannou V, Drantaki V, Angelaina S, Stratou E, Saridi M. The impact of health care workers job environment on their mental-emotional health. Coping strategies: the case of a local general hospital. Heal Psychol Res. 2015;3(1):1984.
2. Mehta RK, Sharma S. Knowledge, attitude and practice of self-medication among medical students. IOSR J Nurs Health Sci. 2015;4(1):89–96.
3. Tesfamariam S, Anand IS, Kaleab G, Berhane S, Woldai B, Habte E, et al. Self-medication with over the counter drugs, prevalence of risky practice and its associated factors in pharmacy outlets of Asmara, Eritrea. BMC Public Health. 2019;19(1):159.
4. Eticha T, Mesfin K. Self-medication practices in Mekelle, Ethiopia. PLoS One. 2014;9(5):e97464.
5. Ali AN, Kai JT, Keat CC, Dhanaraj SA. Self-medication practices among health care professionals in a Private University, Malaysia. Int Curr Pharm J. 2012;1(10):302–10.
6. Galvan MR, Pai DD, Echevarría-Guanilo ME. Self medication among health professionals. REME Rev Min Enferm. 2016;20:e959.
7. Sado E, Kassahun E, Bayisa G, Gebre M, Tadesse A, Mosisa B. Epidemiology of self-medication with modern medicines among health care professionals in Nekemte Town, Western Ethiopia. BMC Res Notes. 2017;10:533.
8. Sajith M, Sureh SM, Roy NT, Pawar A. Self-medication practices among health care professional students in a tertiary care hospital, Pune. The Open Public Health Journal. 2017;10:63–8.
9. Babatunde OA, Fadare JO, Ojo OJ, Durowade KA, Atoyebi OA, Ajayi PO, et al. Self-medication among HCWs in a tertiary institution in South-West Nigeria. Pan Afr Med J. 2016;24:312.
10. Fekadu G, Dugassa D, Negera GZ, Woyessa TB, Turi E, Tolossa T, et al. Self-medication practices and associated factors among health-care professionals in selected hospitals of Western Ethiopia. Patient Prefer Adherence. 2020;14:353–61.
11. Azodo CC, Ehigiator O, Ehigiator L, Ehizele A, Ezeja E, Madukwe I. Self-medication practices among dental, midwifery and nursing students. Eur J Gen Dent. 2013;2(1):54.
12. Fadare J, Desalu O. Self-prescription practices by Nigerian medical doctors. South African Fam Pract. 2014;56(5):253–7.
13. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. Gastroenterol Hepatol Bed Bench. 2013;6(1):14–7.
14. Jember E, Feleke A, Debie A, Asrade G. Self-medication practices and associated factors among households at Gondar Town, Northwest Ethiopia: a cross-sectional study. BMC Res Notes. 2019;12:153.
15. Hanumaiah V, Manjunath H. Study of knowledge, attitude and practice of self medication among health care workers at MC Gann Teaching District Hospital of Shivamogga, India. Int J Basic Clin Pharmacol. 2018;7(6):1174–81.
16. Dilie A, Gualu T, Haile D, Zuleta FA. Knowledge, attitude and practice of self-medication among health science students at Debre Markos University, Northwest Ethiopia. J Public Heal Epidemiol. 2017;9(5):106–13.
17. Hertz JT, Madut DB, Tesha RA, William G, Simmons RA, Galson SW, et al. Self-medication with non-prescribed pharmaceutical agents in an area of low malaria transmission in Northern Tanzania: a community-based survey. Trans R Soc Trop Med Hyg. 2019;113(4):183–8.
18. Moise K, Bernard JJ, Henrys JH. Evaluation of Antibiotic self-medication among outpatients of the State University Hospital of Port-Au-Prince, Haiti: a cross-sectional study. Pan Afr Med J. 2017;28:4.
19. Shafie M, Eyasu M, Muzeyin K, Worku Y, Martín-Aragón S. Prevalence and determinants of self-medication practice among selected households in Addis Ababa community. PLoS One. 2018;13(3):e0194122.
20. Sridhar SB, Shariff A, Dallah L, Anas D, Ayman M, Rao PG. Assessment of nature, reasons, and consequences of self-medication practice among general population of Ras Al-Khaimah, UAE. Int J Appl Basic Med Res. 2018;8(1):3–8.
21. Osemene K, Lamikanra A. A study of the prevalence of self-medication practice among University Students in Southwestern Nigeria. Trop J Pharm Res. 2012;11(4):683–9.
22. Simegn W, Dagnew B, Dagne H. Self-medication practice and associated factors among health professionals at the University of Gondar Comprehensive Specialized Hospital: a cross-sectional study. Infec Drug Resis. 2020;13:2539–40.