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ORIGINAL RESEARCH

Self-Medication Practice and Associated Factors Among Health Professionals at the University of Gondar Comprehensive Specialized Hospital: A Cross-Sectional Study

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Background: Self-medication is the use of medication to treat self-diagnosed disorders or symptoms. In the current time, there has been an increasing tendency in self-medication in pharmacies and retail outlets in our country Ethiopia and alarmingly high in healthcare professionals. In spite of the adverse impacts, there were scarcity of data on self-medication practice among health professionals in Ethiopia. Therefore, this study aimed to determine the practice of self-medication and its determinant factors among health professionals at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia.

Methods: A Cross-sectional study design was employed using a simple random sampling technique to recruit the study participants. We used self-administered questionnaires to collect the data. Epi Info 7 and SPSS 20 were used for data entry and statistical analysis, respectively. Frequencies and mean with standard deviation were computed. Measure of association between self-medication and independent factors was determined using logistic regression. Variables with a $p<0.05$ were declared as determinant factors of self-medication practice.

Results: Four hundred and twelve health professionals were involved in the study with a mean age of 29.9 years (±5.43, range=20–60). In this study, self-medication practice was 54.6% (95% CI: 49.8–59.4). Health professionals who had worked less than 3 years after last graduation (AOR=1.67, 95% CI (1.02, 2.76)), those with 44–55 working hours per week (AOR=2.44, 95% CI: 1.07,5.57), and who knew over-the-counter classification of drugs (AOR=1.75, 95% CI: 1.03,2.99) had significantly higher self-medication practice.

Conclusion: Self-medication practice was remarkably high in the current study which is a major public health problem. The findings suggest a cooperative implementation of pharmaceutical regulations particularly focusing on those health professionals with high working hours per week.

Keywords: self-medication, health professionals, Gondar

Background

Self-medication (SM) is the use of drugs to treat self-diagnosed disorders or symptoms or taking non-prescribed medicines.[1–3] Currently, SM is increasing in Pharmacies or retail outlets.[4] The practice of SM could have both benefits and risks in that appropriate use can save scarce medical resources from being wasted, reduce the burden on health-care facilities, and reduce the cost and time people spend visiting health care facilities for minor symptoms.[5]

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Self-medication is an important concern for health authorities at global level and cannot be considered as entirely harmful.[6] Despite the above-mentioned benefits, irrational use of medications (antibiotics) could lead to the emergence of resistant pathogens which is a major concern[7,8] whereby inappropriate use of SM may lead to lack of public trust for the profession,[9] serious health outcomes, and death.[4,10] Drug resistance demands high cost and leads to greater morbidity and mortality.[11] Due to the benefits and risks, SM practice requires better experience and education to the general population and the health professions to reduce inappropriate use.[7]

Self-medication practices are alarmingly high in healthcare professionals which is associated with age, sex, income, expenditure, education level, medical knowledge, and perception of illnesses.[4] It is known that health professionals are familiar with drugs so they are different from the general population in terms of drug use.[12,13] It is considered due to a high level of professional education as a predictive factor for SM practice.[14,15] Health professionals are more likely to be practicing SM due to the fact they believe that they are knowledgeable about the medicines used.[16] In Ethiopia, SM has become a common phenomenon[17] as described in different populations. Few studies conducted in Ethiopia have described SM practice among different populations particularly focusing on a specific profession.[5] No such study had been conducted at the Comprehensive specialized hospital level. Therefore, the current study was designed to determine SM practice and its determinant factors among health professionals at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia.

Methods

Study Design

This institution-based cross-sectional study was carried out on health professionals working at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, which is located 728 Km away from Addis Ababa, the capital city of Ethiopia. The Hospital serves as a referral center for the nearby general hospitals and provides clinical services for over 5 million inhabitants in the northwest region of Ethiopia. The data collection period was from June to August, 2019.

Study Questions

The current study was intended to answer the following questions. First, what was the practice of SM among health professionals? Secondly, what were the associated factors of SM practice among health professionals at the University of Gondar Comprehensive Specialized Hospital?

Sample and Sampling Method

The sample size (n) was calculated using single population proportion formula with the assumptions of the proportion =0.5, 95% uncertainty interval (UI), and margin of error (d) = 5%. After adding a non response rate of 10%, the final sample size was 423. Stratification was done by department (profession). Samples were determined by proportional allocation for each profession. Then, we applied a lottery method for recruiting study units (health professionals) using a simple random sampling technique. A questionnaire was provided to each consented participant. All health professionals who had been working for more than 1 year at the University of Gondar Comprehensive Specialized Hospital were included. The health professionals under study were nurses, pharmacists, medical doctors, midwives, and laboratory technologists. Health professionals who were severely ill during the data collection period, those who were unwilling, and those who were not present at the time of data collection were excluded.

Instrument

The questionnaire was composed of four sections. The first section was about sociodemographic variables (age, sex, marital status, work experience, profession etc.). The second section of the tool comprised of 22 items to assess knowledge. Respondents were asked 22 knowledge questions about whether they knew about antimicrobial resistance, the SM mean, that medication administration requires basic knowledge about drug action, that changing the time when taking a drug is hazardous, that antihypertensive drugs could not be discontinued when blood pressure returns to the normal range, that overuse of paracetamol will cause liver toxicity, that antacid should be chewed before swallowing, that improper use of medication can result in antimicrobial resistance, that not taking the full dose of a medication can have an effect, that SM can mask signs and symptoms, that drug use during pregnancy should be used with care, that all medications have their own adverse effects, that taking medicine with food, drink, tea, or alcohol can interfere with the effect of the medicine, that antibiotics often have side effects such as diarrhea, that antibiotics cause negative effects on the body's own bacterial flora, that they should terminate a therapy immediately if they feel better after only taking a partial course of

antibiotics, that bacteria can become resistant to antibiotics, that people can become resistant to antibiotics, that antibiotics use for animals can reduce the possibility of effective antibiotics treatment for humans, that antibiotics resistance can spread from animals to humans and that antibiotics resistance can spread from person to person. The fourth section was related to practice of self medication among health professionals: whether they ever took SM or not, reasons for SM practice, diseases most frequently encountered to use SM, source of information for SM practice, and frequently used drugs for SM. The third was about attitude towards SM with 11 items (whether they perceive that SM is part of self-care; if they believe pharmacists are a good source of information for minor medical problems); the course of medicines should be complete although the symptoms subside; do all health-care workers have good ability to treat symptoms; whether they believe that SM is acceptable for health-care workers; whether they believe that health-care workers have good ability to diagnose the symptoms after SM; if they think that SM would be harmful if they are taken without proper knowledge of drugs and disease; whether a medical license should be essential for better administration of drugs; wether they thought that they should be careful with non-prescribed over-the-counter medicines; if they think that health-care workers should check the accompanying medication leaflet; whether they think SM is not acceptable at all and it would be harmful regarding attitude of SM with a four-point Likert-scale from 0 (strongly disagree) to 3 (strongly agree). We used semi-structured, pretested self-administered questionnaire to collect the required data after preparing the questionnaire by reviewing the different literature. In this study, SM was considered when a person used medicines by his/her own decision without a prescription from another health professional to treat self-diagnosed illnesses or symptoms.[18] The overall reliability of the items used for knowledge and attitude of SM was performed and we found a Cronbach's alpha of 0.84 which is good reliability.[19] Content validity was assured by delivering the questionnaire to two epidemiologists and then we included the comments from them.

Data Collection Method

The data collection was using self-administered semistructured questionnaires. First, we prepared the questionnaire after reviewing previous literature.[4,20,21] After obtaining Ethical approval from the School of Pharmacy, University of Gondar, four BSc Nurses were recruited to distribute and return the questionnaire and facilitate the collection process. Before conducting the actual study, orientation was given to facilitators about the purpose of the study and ethical issues. Pretest was done among 20 health professionals outside of the study area and we amended the questionnaire after obtaining feedback from pretest results. The purpose of the study was explained to each study participant to assure their willingness. Any possible identifiers were eliminated from the questionnaire to ascertain confidentiality. Finally, facilitators provided the questionnaire to each participant and then returned after completion.

Statistical Analysis

After checking for the completeness and consistency, data were entered into the Epi-info 7.1 and then exported into SPSS version 20 for computing, recoding, and further analysis. We used chi-square test to compare each independent variable by SM. Continuous variables were described using mean standard deviation (SD) whereas categorical variables were presented using frequency with percent. Point prevalence and its 95% UI were used to describe the practice of self-medication. Binary logistic regression model was used to find out possible candidate variables for the final model. An independent variable with a p-value of <0.2 was entered into a multivariable binary logistic regression. In the final model, a variable with a p-value of ≤0.05 with 95% uncertainty interval was treated as a significant factor for self-medication practice. The strength of association between independent factors and SM was measured using odds ratio with its 95% UI.

Results

A total of 423questionnaires were distributed to the participants and 412 health professionals voluntarily agreed to participate in this study representing a response rate of 97.4%. The mean age of respondents was 29.9 years (±5.43) which ranged from 20–60 years. From the participants 220 (53.4%) participants were males, 339 (82.3%) participants attended educational level of Bachelor's degree. Overall, 142 (34.5%) participants had a minimum of 2 years work experienceand 196 (47.6%) professionals were nurses. A total of 172 (41.7%) participants reported that they had a high work load and 117 (28.4%) participants reported having a high work load outside of the hospital (Table 1).

Self-Medication Practice and Associated Factors

From a total of 412 respondents, 225 (54.6%, 95% CI:49.8–59.4) reported SM practice in their life to treat

Table 1 Sociodemographic Characteristics of Study Participants from the University of Gondar Comprehensive Specialized Hospital, Gondar, Ethiopia, 2019 (n=412)

Variable	Categories	Total N	Self-Medicating N (%)	Not Self-Medicating N (%)	Statistical Tests
Sex	Female Male	192 220	98 (51) 127 (57.7)	94 (49) 93 (42.3)	X^2=1.849, p=0.174
Age in years	20–25 26–28 29–31 32–60	69 133 91 119	32 (46.4) 71 (53.4) 58 (63.7) 64(53.8)	37 (53.6) 62 (46.6) 33 (36.3) 55(46.2)	X^2=5.058, p=0.168
Martial status	Married Unmarried	226 186	125 (55.3) 100 (53.8)	101 (44.7) 86 (46.2)	X^2=0.098, p=0.754
Education level	Diploma Bachelor degree Masters and above	26 339 47	15 (57.7) 190 (56) 20 (42.6)	11 (42.3) 149 (44) 27 (57.4)	X^2=3.138, p=0.208
Work experience in years	<4 4–7 8 and above	142 166 104	76 (53.5) 87 (52.4) 62 (59.6)	66 (46.5) 79 (47.6) 42 (40.4)	X^2=1.443, p=0.486
Profession	Nurse Pharmacy Medicine Midwifery Laboratory	196 112 18 69 17	99 (50.5) 79 (70.5) 11 (61.1) 30 (43.5) 6 (35.3)	97 (49.5) 33 (29.5) 7 (38.9) 39 (56.5) 11 (64.7)	X^2=19.104, p=0.001
Working hours per week	30–38 39–43 44–55 56–110	45 161 97 109	31 (68.9) 96 (59.6) 48 (49.5) 50 (45.9)	14 (31.1) 65 (40.4) 49 (50.5) 59 (54.1)	X^2=9.722, p=0.021
Work load out of work	Very low Low Medium High	51 84 160 117	29 (56.9) 38 (45.2) 83 (51.9) 75 (64.1)	22 (43.1) 46 (54.8) 77 (48.1) 42 (35.9)	X^2=7.817, p=0.050
Average number of patients contacted per day	4–9 10–14 15–29 30–32	100 85 59 168	47 (47) 45 (52.9) 28 (47.5) 105 (62.5)	53 (53) 40 (47.1) 31 (52.5) 63 (37.5)	X^2=7.869, p=0.049
Work load	Very low Low Medium High	32 43 165 172	18 (56.3) 17 (39.5) 91 (55.2) 99 (57.6)	14 (43.7) 26 (60.5) 74 (44.8) 73 (42.4)	X^2=4.60, p=0.204

self recognized illnesses/symptoms. A total of 311 (75.5%) health professionals revealed they knew the OTC drugs classification. Overall, 138 (61.3%) claimed non-seriousness of illness as a reason for SM, drugs related to antipain were frequently used by 78.4% of health professionals, and 67.2% participants practice SM for headache (Table 2).

We checked bivariable association of all independent factors with SM using binary logistic regression. Sex, profession, years after last graduation, working hours per week, average patients contacted per day, work load, knowledge about OTC classification of drugs, and ever taking antibiotics were candidate variables for the final model and entered into the multivariable logistic

Table 2 Self-Medication Practice and Related Characteristics Among Health Professionals at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2019 (n=412)

Variables	Categories	Frequency	Percent (%)
Do you know the OTC drugs classification?	Yes	311	75.5
	No	101	24.5
Ever taken antibiotics	Yes	343	83.3
	No	69	16.7
Used antibiotics within last year	Yes	183	44.4
	No	229	55.6
Knowledge	Good	233	56.6
	Poor	197	43.4
Attitude	Good	263	63.8
	Poor	149	36.2
Practice	Use self medication	225	54.6
	No self medication	187	45.4
Reasons for SM	Non seriousness of illness	138	61.3
	Emergency use	124	55.1
	To save time	70	31.1
	Quick relief	54	24
	Cost effectiveness	33	14.6
	Prior experience	55	13.3
	Easy and convenient	28	12.4
	Lack of trust in prescribing drugs	7	3.2
Drugs frequently used	Antipain	176	78.4
	Antiulcer	59	26.5
	Antibacterial	52	23.3
	CV drugs	4	1.8
	Others	5	2.2
Diseases most frequently encountered when choosing to use SM	Headache	151	67.2
	Fever	111	49.5
	Common cold	110	48.8
	Cough	70	31.1
	Gastric pain	61	27.4
	Diarrhea	51	22.6
	Constipation	39	17.5
	Vomiting	30	13.3
	Chest pain	16	7

regression. In the final model; participants with less than 3 years after last graduation had 1.5-fold (AOR=1.67, 95% UI (1.02, 2.76)) higher practice of SM than their counterparts. The odds of having SM practice was 2.5 times higher (AOR=2.44, 95% UI: (1.07,5.57)) among respondents who had 44–55 working hours per week than those with 56–110 working hours per week. Furthermore, health professionals who had knowledge of OTC classification of drugs had 1.75 times (AOR=1.75, 95% UI: (1.03,2.99)) higher SM practice than their counterparts (Table 3).

Discussion

Self-medication practice is higher in developing countries like Ethiopia and exerts huge health impacts particularly on the emergence of drug-resistant pathogens.[3,5] The current study aimed to describe the practice of SM and associated factors among health professionals at the University of Gondar Comprehensive Specialized Hospital, northwest Ethiopia. In the current study, the prevalence of SM practice among health professionals was 54.6% (95% UI: 49.80–59.40%). The period since last graduation, working hours per week, and knowledge on over-the-counter classification of drugs were significantly associated factors of SM practice.

The prevalence of SM in our study is consistent with a previous study in Nigeria (52.1%).[22] However, our findings disclosed a lower self-medicaton practice than studies in Nekemte town, Western Ethiopia (67.5%),[12] UAE (96.6%),[23] Nigeria (73%),[24] India (87.5%),[16] and Malaysia (77.6%).[4] This difference might be due to differences in sample size, setting, socioeconomic gaps, sampling method, and law enforcement. On the other hand, the current study revealed a higher prevalence of self-medication than other studies as observed in Brazil (24.2%).[25] This might be because the study in Brazil only used nurses as study population and also sample size, methods used, and economic differences might be accountable for the variation.

In this study the pharmacy professionals had higher indications of self-medication practice (70.5%) followed by physicians (61.1%), and nurses (50.5%). This is supported by other findings in Jamaica where pharmacists practiced higher SM.[26] It may be due to the fact that pharmacists can access the drugs easily as they are front-line workers of drugs and drug products.[27] As observed in this study "non seriousness of the illness" was among the main reasons for SM practice which is similar wth other studies.[4,12,23,28] This study found headache was the major condition that subjected health professionals to SM that is similar with other studies.[4,28] Antipain and antiulcer (gastrointestinal drugs) were the two most frequently used drugs for SM practice in this study. The first group of

Table 3 Associated Factors of SM Practice Among Health Professionals at the University of Gondar Comprehensive Specialized Hospital, Gondar, Northwest Ethiopia, 2019 (n=412)

Variables	Categories	Self-Medication Practice		COR (95% UI)	AOR (95% UI)
		Yes (%)	No (%)		
Sex	Female	98 (43.6)	94 (50.3)	1	1
	Male	127 (56.4)	93 (49.7)	1.31 (0.89,1.93)	1.45 (0.95,2.15)
Department	Nurse	99 (44.0)	97 (51.9)	0.43 (0.26,0.70)	0.61 (0.33,1.13)
	Pharmacy	79 (35.1)	33 (17.6)	0.65 (0.24,1.75)	0.59 (0.21,1.65)
	Medicine	11 (4.9)	7 (3.7)	1.33 (0.76,2.30)	1.68 (0.93,3.07)
	Midwifery	30 (13.3)	39 (20.9)	1.87 (0.67,5.26)	1.84 (0.62,5.49)
	Laboratory	6 (2.7)	11 (5.9)	1	1
Years after last graduation	<3	65 (28.9)	36 (19.3)	1.7 (1.07,2.71)	1.67 (1.01,2.76)*
	≥3	160 (71.1)	151 (80.7)	1	1
Working hours per week	0–38	31 (13.8)	14 (7.5)	1.50 (0.74,3.04)	1.51 (0.72,3.26)
	39–43	96 (42.7)	65 (34.8)	2.26 (1.07,4.77)	2.26 (0.98,5.18)
	44–55	48 (21.3)	49 (26.2)	2.61 (1.25,5.45)	2.44 (1.07,5.57)*
	56–110	50 (22.2)	59 (31.6)	1	1
Average number of patients contacted per day	4–9	47 (20.9)	53 (28.3)	1	1
	10–14	45 (20.0)	40 (21.4)	1.88 (1.14,3.10)	1.43 (0.81,2.54)
	15–29	28 (12.4)	31 (16.6)	1.48 (0.87,2.51)	1.20 (0.64,2.25)
	30–200	105 (46.7)	63 (33.7)	1.85 (1.01,3.36)	1.60 (0.80,3.18)
Work load	None	18 (8.0)	14 (7.5)	1	1
	Low	17 (7.6)	26 (13.9)	1.06 (0.49,2.26)	0.92 (0.39,2.14)
	Medium	91 (40.4)	74 (39.6)	2.07 (1.05,4.10)	1.81 (0.87,3.78)
	High	99 (44.0)	73 (39.0)	1.10 (0.72,1.70)	1.00 (0.63,1.59)
Knowledge on OTC classification of drugs	Yes	181 (80.4)	130 (69.5)	1.80 (1.15,2.84)	1.75 (1.03,2.99)*
	No	44 (19.6)	57 (30.5)	1	1
Ever taken antibiotics	Yes	196 (87.1)	147 (78.6)	1.84 (1.09,3.11)	1.39 (0.76,2.56)
	No	29 (12.9)	40 (21.4)	1	1

Notes: Hosmer and Lemeshow goodness of fit p=0.391, *p<0.05.
Abbreviations: OTC, over-the-couner; UI, uncertainty interval; COR, crude odds ratio; AOR, adjusted odds ratio.

drugs (analagesics) were in line with the study done in Nekemte.[12,16] This might be because the analgesics are dominantly available as over-the-counter.

In the current study, study participants who had less than 3 years after last graduation were 1.7-fold more likely to practice SM than their counterparts. The association might be due to the fact that new professionals are not familier with health risks that can occur if inappropriate SM has been used. It is a new finding since similar findings were not found for comparison. And also it might be related with work experience as newer graduates may have less work experience[29] and hence were susceptible for SM practice as was observed by another study.[4] Health professionals with 44–55 working hours per week had 2.4 times greater SM practice than those participants with 56–110 working hours per week. This could be explained as health professionals with low working time may have free time to read materials like leaflets, books, and to access information on drug use thereby they could have high ability and confidence to select drugs for themselves. However, no study incorporated this variable and so we were not able to compare it with others. The odds of having SM was 1.75 times higher among health professionals who reported that they knew the classifications of OTC drugs than who those who did not know the classification of OTC drugs. This finding is clearly understandable whereby knowledge of OTC drugs can help respondents to consider self-medication practice.[4]

Limitations of the Study

The possible limitations in the current study includes social desirability and recall bias. In addition, the cause-effect relationship cannot be established as this is a cross-sectional study. The use of binary logistic instead of

poisson regression may lead to overestimation of association between the outcome and covariates.

Conclusion

The current study showed that SM practice is common among health professinals. Non-seriousness of the illness, was the main reason to practice SM. Period since last graduation, working hours per week, and knowledge on over-the-counter classification of drugs were significantly associated factors of SM practice. It is better to create awareness on the risk of SM especially on newly graduated health professionals and there is a need for the government to tailor restrictions on drug use without prescription.

Abbreviations

AOR, adjusted odds ratio; COR, crude odds ratio; OTC over-the-counter; SD, standard deviation; SM, self-medication.

Data Sharing Statement

The dataset can be obtained from the corresponding author upon reasonable request.

Ethical Approval and Consent to Participate

Ethical approval was gained from the ethical committee of the School of Pharmacy, University of Gondar with ethical review protocol number: SOP/559/2019. All participants were informed about the purpose of the study. Written informed consent was obtained from each participant to assure their willingness of participation and no identifiers were listed in the questionnaire to make it confidential.

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Author Contributions

All authors made a significant contribution to the work reported, in the conception, study design, execution, acquisition of data, analysis and interpretation, and in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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