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Prevalence and reasons for practicing self-medication among basic health staff: case of Monywa District, Myanmar: a cross-sectional study

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ABSTRACT

Background: Self-medication is often associated with an incorrect diagnosis, wrong medication, delayed effective medical care, disease masking, prolonged-course therapy, and harmful effects following medication. This study aimed to demonstrate self-medication prevalence and detect the reasons for practicing self-medication among BHS.

Methods: Researchers conducted this cross-sectional study within four township health departments of Monywa District. A total of 405 BHS was culled from each subpopulation of BHS through proportional sampling. SPSS version-25 was applied for data analysis.

Results: This study demonstrated that the self-medication prevalence among BHS was 57.8%, of which self-medication of antibiotics was 61.5%. The most common reasons for self-medication were cold, cough, fever, ache and pain in the head, throat, teeth, muscles, and bones, gastrointestinal symptoms, and high blood pressure. Commonly practiced self-medication drug was pain relievers (86.8%) and the most preferred antibiotic self-prescribed was amoxicillin (26.5%). Other drug types used for self-medication were cold and cough medicines, gastro-intestinal medicines, vitamins and minerals, and anti-hypertensive, contraceptive, hypoglycemic, and herbal medicines. Mostly, self-medication practices were based on own experiences (83.3%), easy access and availability of medicines (82.5%), academic knowledge of the diseases (41%), and treatment options (47.4%), considering the symptoms as minor (29.5%).

Conclusions: A high prevalence of self-medication occurred among BHS. This study points out that BHS needs to be more comprehensive about safety, regulations, and rational use of medicines. This study suggests that the Myanmar technical working groups should enforce the National medicines policy.

Keywords: Self-medication, Prevalence, Reasons, Basic health staff

INTRODUCTION

Self-medication refers to self-administer treatment for self-recognized ailments by making self-selection of medicines without prior medical consultation for drug choice, dose, course, indication, interaction, and caution. Across the globe, many people who feel unwell often have a common sense to resolve on their own by taking

the available medicines.² Meanwhile, self-medication is under the recognition of the World Health Organization (WHO) for not only taking self-care of minor ailments but also reducing workload pressure on medical services because it has positive benefits for people difficult for consulting a physician.^{1,3} However, self-medication is often associated with an incorrect diagnosis, wrong medication, delayed effective medical care, disease

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masking, prolonged-course therapy, and harmful effects following medication.⁴⁻⁷ Also, it is the major contributor for emerging and spreading drug resistance and demanding newer expensive medicines.⁸⁻¹⁰ Its highest prevalence is more likely to occur among healthcare workers and nearly half of the health workers from many countries use antibiotics for their self-medication. This proportion will be a big issue for emerging more antibiotic-resistant bacteria strains in the near future. Currently, antibiotic resistance becomes a worldwide problem.^{11,12}

When compared with the general public, the healthcare workers can easily obtain a variety of medicines and they have acquired more knowledge and work experiences related to disease conditions and treatment options. However, when their knowledge of diagnosis and convenience of medicines are executed under the improper patterns of medicines use, the indiscriminate drug consumptions or non-lethal amount of medicines are often generated and in turn, leads to drug resistance.^{2,10,13} Importantly, drug resistance, one of the top global concerns needs to be tackled by governments and stakeholders of every country. Particularly, South-East Asia Region has a higher prevalence of infectious diseases and a high burden of drug resistance because it becomes an epicenter with the increased investments from many places for economic growth.¹⁴

Myanmar is one of the countries where there is a bigger problem of drug resistance and many Myanmar people have been killed by drug-resistant bacterial strains every year. 15 Myanmar has been declared for the existence of P. falciparum malaria resistant to the first-line treatment as of July 2016. 16 According to the country profile, in 2018, a total of 3479 patients were infected with multidrugresistant tuberculosis (MDR-TB) that is resistant to both rifampicin and isoniazid, and 35 patients suffered from extensively drug-resistant tuberculosis (XDR-TB), for which at least four of the major anti-TB drugs could not be used.¹⁷ A study from china figured out that drugresistant HIV-1 was found up to 12.8% among Myanmar travellers.¹⁸ According to 2016 data, amoxicillin, ampicillin, cefotaxime, ceftazidime, ceftriaxone, ciprofloxacin, cotrimoxazole, norfloxacin, and tetracycline are less effective to treat Escherichia coli and Klebsiella species. Pseudomonas aeruginosa and Acinetobacter species are resistant to ciprofloxacin. Carbapenem could not be efficacious in killing Pseudomonas, Acinetobacter, and Enterobacteriaceae species.19

In Myanmar, the emergence and spread of drug resistance have been recognized as national challenges, for which the development of standard guidelines for treatment options, regular updating these guidelines, and exercising the cautions and indications of drugs are the important and useful strategies. Moreover, for mitigating these increased emergences and spread of drug resistance, the campaigns (e.g. world antibiotics awareness week) are

regularly celebrated in order for improving the best practice of proper utilization of drugs among healthcare professionals and the general public. However, awareness and understanding of drug resistance remain relatively low among healthcare professionals themselves. 16 On the other hand, like Cambodia and Laos in SEAR, Myanmar is very difficult to estimate self-medication prevalence, antibiotics utilization rates, and their associations, which can support to effective handling of drug resistance emergence and spread. In some countries of SEAR such as Indonesia and the Philippines, the decreasing trends in utilization rates of antibiotics were seen between 2000 and 2010. From 2005 through 2010, the increased utilization rates of antibiotics were found in Thailand. Malaysia, and Vietnam. These trends of antibiotics utilizations were highly related to antibiotics selfmedication practices among healthcare workers, the general public, and animals.²¹

In Myanmar, National action plan on antimicrobial resistance has developed with the financial and technical assistance of WHO.15 To implement this action plan successfully, Myanmar needs to control inappropriate drug consumption through self-medication, promote awareness on drug resistance, and educate not only the health personnel but also the community for gaining awareness and knowledge development on the interrelationships between self-medication and drug resistance. To support these actions, doing researches is of foremost importance. In our country, Myanmar, it is a necessary issue for doing social empirical researches to know how and why extensive self-medication is being practiced among different groups including basic health staff (BHS) for combating the potential emergence and spread of drug resistance. This study aimed to demonstrate self-medication prevalence and to detect the reasons for practicing self-medication among BHS.

METHODS

This primary quantitative research was cross-sectional and descriptive in nature and began in early February 2020, but was completed by end of December 2021 due to the COVID-19 crisis. This approach was employed to provide a snapshot of the prevalence of self-medication practice among BHS at a single point in time, to prove assumptions of the reasons for BHS' self-medication practice, and to substitute them with actual study findings. All township health departments (Ayadaw, Budalin, Chaung-U, Monywa) under the District health department of Monywa, Sagaing Region were purposively selected as a study area. A broad range of governmental BHS (medical and public health staff) under township health departments was the principal concern of this study and this range was from supervisor level (health assistant-1 (HA-1), township health nurse (THN), ward sister, health assistant (ha), public health supervisor-1 (PHS-1), and lady health visitor (LHV)) to implementer level (nurse, pharmacist, midwife, public health supervisor-2 (PHS-2), and vertical staff at specific disease control units). This study excluded the medical officers and BHS with less than 1 year of work experience to reduce bias in medical knowledge among study participants.

Sample size determination and sampling procedure

This aimed to calculate an adequate sample to estimate the prevalence of BHS's self-medication practice with reliable precision. It was manipulated applying a simple formula

$$n = z2pq/d2$$

The formula was given by Daniel.²² As the researchers wanted to present the finding results with 95% CI (confidence interval), Z value and tolerated margin of error (d) were set at 1.96 respectively 0.05. Further, the researchers referenced an estimated prevalence of selfmedication among healthcare workers (52.1%) from a study in South-West Nigeria²³ to calculate the percentage of failure (q) which was 47.9% (100-52.1). According to this determination, 384 BHS were estimated as a required sample size, but the researchers added an extra 43 to this estimation for preventing an invalid response rate. Therefore, a total of 427 BHS was an adequate sample size to achieve the predefined objectives of this study. The purpose of this sampling procedure was to avoid bias and to include all representatives of BHS. All HA-1, THN/Ward Sister, Pharmacist, and vertical staff from each township were totally culled because of their standalone designated posts in the study area. Other BHS were grouped in six (HA (Group-1), LHV (Group-2), Nurses (Group-3), Midwives (Group-4), PHS-1 (Group-5), PHS-2 (Group-6)) and the required sample was culled from each subpopulation of BHS through proportional sampling.

Data collection tools and methods

The previous researches, literature reviews, and the objective setting of this research guided the questionnaire design. This semi-structured, self-administrated questionnaire was pre-tested for validity, modified for consistency, and applied for gathering quantitative data. All contents of this questionnaire were worded carefully to be completely understandable and formatted to reduce measurement errors.

To reduce interviewer error, to protect the respondents' privacy, and to maximize the amount of data collected within the allotted time, the self-administered mode was applied as a data collection method. The self-administered questionnaires were sent to all eligible BHS according to the addresses of health facilities where they work, and the questionnaires with answers were sent back to Township Health Department to researchers. Very specific instructions about how to fill the questionnaire and strategies to maximize response rate were executed via formal meeting, telephone, mail, messenger, Viber, and even in-person visits.

Data management and analysis

The researchers carefully administrated all processes of gathering data, validating, storing, and protecting the collected data. The data collected into the questionnaires were checked, counter-checked for quality, and the questionnaires with many missing data were excluded. The collected data were entered, compiled, cleaned, organized, and summarized through EpiData version 3.1. Frequency and percentage statistics were used for the categorical data and the central tendency and variability were computed for the continuous data by applying SPSS version-25. In determining the interrelationships between self-medication practices and background characteristics of BHS, bivariate analysis was exercised.

RESULTS

Background characteristics of participants

Although self-administrated questionnaires primarily distributed to 427 BHS from four township health departments across Monywa District, the questionnaires of 22 BHS could not be included in this research due to many incomplete answers, so the participation rate was 94.8%. Of the 405 BHS, 55 (13.6%) were from Chaung-U, 63 (15.6%) from Ayadaw, 82 (20.2%) from Butalin and 205 (50.6%) from Monywa. This study included 87.9% of females. The age range of participants was 21-58 years (33.94±9.8) and the largest proportion of participants were aged <30. Among the 256 public health staff, 117 (45.7%) were midwives, 83 (32.4%) were PHS-2, 22 (8.6%) were LHV, and 17 (6.6%) were HA. Among the 149 medical staff, more staff was nurse 138 (92.6%) than ward sister. About 1% of the total participants included a malaria assistant, a leprosy inspector, a junior leprosy worker, and a pharmacist. The proportion of participants with a bachelor's degree (B. Comm. H and BNSc) was 10.4% compared to those with diplomas in nursing and midwifery at 59.8%, and with a health-related certificate at 29.8%. The mean length of service of participants was 10.7±8.2 years, with a maximum length of 34.25 years and a minimum length of 1 year.

Prevalence of self-medication

As reported by BHS depending on their experiences within the last three months, the overall prevalence of self-medication was 57.8%. Generally, a higher prevalence of self-medication was found among male BHS as compared to female BHS (61.2% versus 57.3%). According to their age groups, the prevalence of selfmedication in those less than 30 years was 62%, 54.4% in those between 30 and 39 years, 54.5% in those 40 and 49 years, and 59.3% in those over 50 years respectively. Prevalence of self-medication amongst BHS working in medical department was 61.6% and in those working in the public health department was 55.6%. The BHS who had healthcare certification for RHA/CHA, those with a diploma in Nursing, and those with BNSc had the highest prevalence of self-medication with 75%, 61.5%, and 60.7% respectively.

 $Table \ 1: Background \ characteristics \ of \ respondents \ \& \ self-medication \ prevalence \ with \ row \ total \ (n=405).$

| Characteristics | | Chaung-U | | Ayadaw | | Butalin | | Monywa | | Prevalence | |
|--|-------------------------|----------|------|--------|------|---------|------|--------|------|------------|------|
| | | N | % | N | % | N | % | N | % | N | % |
| Age (years) | <30 | 26 | 47.3 | 34 | 54.0 | 33 | 40.2 | 94 | 45.9 | 114 | 61.0 |
| | 30-39 | 13 | 23.6 | 12 | 19.0 | 21 | 25.6 | 57 | 27.8 | 56 | 54.4 |
| | 40-49 | 13 | 23.6 | 13 | 20.6 | 21 | 25.6 | 41 | 20.0 | 48 | 54.5 |
| | >50 | 3 | 5.5 | 4 | 6.3 | 7 | 8.5 | 13 | 6.3 | 16 | 59.3 |
| Gender | Male | 15 | 27.3 | 14 | 22.2 | 13 | 15.9 | 7 | 3.4 | 30 | 61.2 |
| Gender | Female | 40 | 72.7 | 49 | 77.8 | 69 | 84.1 | 198 | 96.6 | 204 | 57.3 |
| | B.Comm.H | 2 | 3.6 | 5 | 7.9 | 1 | 1.2 | 6 | 2.9 | 7 | 50.0 |
| | RHA/ CHA | 3 | 5.5 | 2 | 3.2 | 3 | 3.7 | 0 | 0.0 | 6 | 75.0 |
| | BNSc | 0 | 0.0 | 0 | 0.0 | 1 | 1.2 | 27 | 13.2 | 17 | 60.7 |
| High art Haalth agus P | Diploma in Nursing | 14 | 25.5 | 12 | 19.0 | 16 | 19.5 | 80 | 39.0 | 75 | 61.5 |
| Highest Healthcare & Medical Certification | Diploma in Midwifery | 16 | 29.1 | 20 | 31.7 | 30 | 36.6 | 54 | 26.3 | 69 | 57.5 |
| | LHV | 4 | 7.3 | 2 | 3.2 | 5 | 6.1 | 11 | 5.4 | 12 | 54.5 |
| | PHS-1 | 0 | 0.0 | 1 | 1.6 | 1 | 1.2 | 3 | 1.5 | 2 | 40.0 |
| | PHS-2 | 14 | 25.5 | 21 | 33.3 | 25 | 30.5 | 23 | 11.2 | 44 | 53.0 |
| | Others | 2 | 3.6 | 0 | 0.0 | 0 | 0.0 | 1 | 0.5 | 2 | 66.7 |
| Department | Public Health | 40 | 72.7 | 51 | 81.0 | 66 | 80.5 | 102 | 49.8 | 144 | 55.6 |
| Department | Medical Care | 15 | 27.3 | 12 | 19.0 | 16 | 19.5 | 103 | 50.2 | 90 | 61.6 |
| | HA-1 | 1 | 1.8 | 1 | 1.6 | 1 | 1.2 | 1 | 0.5 | 2 | 50.0 |
| | THN & Sister | 1 | 1.8 | 1 | 1.6 | 1 | 1.2 | 12 | 5.9 | 8 | 53.3 |
| | HA | 4 | 7.3 | 5 | 7.9 | 3 | 3.7 | 5 | 2.4 | 10 | 58.8 |
| | Nurse | 13 | 23.6 | 11 | 17.5 | 16 | 19.5 | 98 | 47.8 | 86 | 62.3 |
| Title | LHV | 4 | 7.3 | 3 | 4.8 | 5 | 6.1 | 10 | 4.9 | 12 | 54.5 |
| | PHS-1 | 0 | 0.0 | 1 | 1.6 | 1 | 1.2 | 3 | 1.5 | 2 | 40.4 |
| | MW | 16 | 29.1 | 20 | 31.7 | 30 | 36.6 | 51 | 24.9 | 68 | 58.1 |
| | PHS-2 | 14 | 25.6 | 20 | 31.7 | 25 | 30.5 | 24 | 11.7 | 44 | 53.0 |
| | Others | 2 | 3.6 | 1 | 1.6 | 0 | 0.0 | 1 | 0.5 | 2 | 50.0 |
| | <1-5 | 16 | 29.1 | 21 | 33.3 | 22 | 26.8 | 68 | 33.2 | 77 | 60.6 |
| | 6-10 | 16 | 29.1 | 19 | 30.2 | 25 | 30.5 | 43 | 21.0 | 57 | 55.3 |
| Length of Services (years) | 11-15 | 7 | 12.7 | 4 | 6.3 | 7 | 8.5 | 37 | 18.0 | 32 | 58.2 |
| | 16-20 | 8 | 14.5 | 8 | 12.7 | 9 | 11.0 | 27 | 13.2 | 27 | 51.9 |
| | 21 & above | 8 | 14.5 | 11 | 17.5 | 19 | 23.2 | 30 | 14.6 | 41 | 60.3 |
| | Chaung-U | | | | | | | | | 46 | 83.6 |
| T | Ayadaw | | | | | | | | | 38 | 60.3 |
| Township | Butalin | | | | | | | | | 46 | 56.1 |
| | Monywa | | | | | | | | | 104 | 50.7 |
| Overall prevalence | | | | | | | | | | 234 | 57.8 |

The reported prevalence of self-medication did not remarkably vary among those with a diploma in Midwifery (57.5%), LHV (54.5%), PHS-2 (53%), and B. Comm. H (50%). A lower prevalence of 40% was found amongst BHS who had healthcare certification for PHS-1. No noticeable difference in prevalence was found among BHS with different lengths of services. The prevalence of

self-medication among BHS who had a total length of government service for less than 5 years, 6-10 years, 11-15 years, 16-20 years, and over 21 years was 60.6%, 55.3%, 58.2%, 51.9%, and 60.3% respectively. Additionally, self-medication had a higher prevalence in Chaung-U township as compared to Ayadaw township (83.6% versus 60.3%), compared to Butalin township (83.6% versus 56.1%), and compared to Monywa township (83.6% versus 50.7%).

Table 2: Common illness and medicines for self-medication among BHSs (n=234).

| Items | | N | % |
|-------------------|---|-----|------|
| | Headache | 140 | 59.8 |
| | Cold, cough and fever (common cold, flu) | 108 | 46.2 |
| | Sore throat | 55 | 23.6 |
| | Dizziness | 48 | 20.5 |
| | Supplements | 44 | 18.8 |
| | Other GIT problems (abdominal pain, indigestion, constipation, nausea, vomiting, gastritis, etc.) | 37 | 15.8 |
| | Toothache | 35 | 15.0 |
| | Musculoskeletal pain | 23 | 9.8 |
| | High blood pressure | 16 | 6.8 |
| | Loose motion | 14 | 6.0 |
| | Contraception | 14 | 6.0 |
| | Mouth ulcers | 10 | 4.3 |
| | Insomnia | 9 | 3.8 |
| | Urinary tract problems | 8 | 3.4 |
| Illness for Self- | Allergic reactions | 6 | 2.6 |
| medication | Palpitation | 6 | 2.6 |
| | Diabetes | 5 | 2.1 |
| | Asthma | 5 | 2.1 |
| | Acne | 5 | 2.1 |
| | Sinusitis | 4 | 1.7 |
| | Skin infection or wound | 4 | 1.7 |
| | Worm infestations | 4 | 1.7 |
| | Dysentery | 3 | 1.3 |
| | Chest pain | 3 | 1.3 |
| | Eye and Ear infection | 3 | 1.3 |
| | Pneumonia | 2 | 0.9 |
| | Typhoid | 2 | 0.9 |
| | Reproductive tract problems | 2 | 0.9 |
| | Acute respiratory tract infection | 1 | 0.4 |
| | Burning | 1 | 0.4 |
| | Oedema | 1 | 0.4 |
| | Analgesics | 203 | 86.8 |
| | Antibiotics | 144 | 61.5 |
| | Cold and cough medicines | 110 | 47.0 |
| | Vitamins, minerals, energizers, and dietary supplements | 96 | 41.0 |
| | Gastrointestinal drugs including antacids, ranitidine, omeprazole, laxatives, antidiarrhoeals, etc. | 95 | 40.6 |
| Medicines used | Antihistamines | 71 | 30.3 |
| for Self- | Antihypertensive drugs | 18 | 7.7 |
| medication | Hormones (including contraceptive medicines) | 16 | 6.8 |
| | Herbal drug and distillates | 13 | 5.6 |
| | | | |
| | Antidiabetic drugs | 12 | 5.1 |
| | Anti-asthmatic drugs | 9 | 3.8 |
| | Cardiovascular drugs | 5 | 2.2 |
| | Antidepressants | 4 | 1.7 |
| | Drugs for treatment of hair and skin disorders | 4 | 1.7 |

Table 3: Reasons and antibiotics used for self-medication among BHSs (n=234).

| Items | | N | % |
|------------------|--|-----|------|
| | Being BHS | 195 | 83.3 |
| | Convenience of Medicines | 193 | 82.5 |
| | Academic knowledge of the medicines | 111 | 47.4 |
| | Academic knowledge of the diseases | 96 | 41.0 |
| | Considering the symptoms as minor or Not necessary to consult a doctor | 69 | 29.5 |
| | Advice from close supervisors or co-workers | 59 | 25.2 |
| | Pre-experience | 48 | 20.5 |
| | Old prescription | 31 | 13.2 |
| | Acceptance of self-prescription | 27 | 11.5 |
| Reasons for | No time to seek medical care of physicians | 21 | 9.0 |
| Self-medication | Believing the same medicines would be prescribed by a doctor | 16 | 6.8 |
| Sen medication | Cost reduction | 15 | 6.4 |
| | Too much distance to go to physician clinic | 8 | 3.4 |
| | Avoiding crowd and waiting time at OPD | 8 | 3.4 |
| | Internet | 5 | 2.1 |
| | Advertisement | 4 | 1.7 |
| | Avoid being a patient | 3 | 1.3 |
| | Afraid to go night out | 1 | 0.4 |
| | Lack of trust in prescribing doctor | 1 | 0.4 |
| | Recommended by pharmacists | 1 | 0.4 |
| | Hospital phobia | 1 | 0.4 |
| | Amoxicillin | 62 | 26.5 |
| | Azithromycin | 33 | 14.1 |
| | Ampicillin+Cloxacillin | 27 | 11.5 |
| | Metronidazole | 27 | 11.5 |
| | Norfloxacin | 15 | 6.4 |
| | Cephalexin | 14 | 6.0 |
| | Amoxicillin and Clavulanic | 8 | 3.4 |
| Antibiotics used | Ciprofloxacin | 7 | 3.0 |
| for Self- | Cotrimoxazole | 6 | 2.6 |
| medication | Cefadroxil | 3 | 1.3 |
| | Ofloxacin | 2 | 0.9 |
| | Penicillin-V | 2 | 0.9 |
| | | 2 | |
| | Ketoconazole | | 0.9 |
| | Cloxacillin Flucloxacillin | 1 | 0.4 |
| | | 1 | 0.4 |
| | Fluconazole | 1 | 0.4 |
| | Gentamycin (inj:) | 1 | 0.4 |

Common illnesses for self-medication

Headache and cold, cough and fever were reported as the most frequent illnesses for self-medication within last three month (59.8%, N=140 respectively 46.2%, N=108). As other frequent symptoms for self-medication, sore throat was 23.6% (N=55), dizziness was 20.5% (N=48), supplement was 18.8% (N=44), gastro-intestinal problems were 15.8% (N=37), toothache was 15% (N=35), musculoskeletal pain was 9.8% (N=23), hypertension was 6.8% (N=16), and diarrhea and contraception were 6% (N=14) respectively. Less common symptoms for self-medication included mouth

ulcers (4.3%, N=10), insomnia (3.8%, N=9), urinary tract problems (3.4%, N=8), palpitation (2.6%, N=6) and allergic reaction (2.6%, N=6). The frequencies and percentages of common illness reported are documented in (Table 2).

Medicines for self-medication

This study could list the 14 commonly used types of medicine taken by BHS within the last three months for self-medication. Most medicines they self-medicated were obtained from departmental drug stores and drug-retail outlets.

Table 4: Distribution of good knowledge and perception according to the specific characteristics of basic health staff (n=405).

| | Good | Good | | | |
|-----------------------------|------------|------------|--|--|--|
| Variables | Knowledge | Perception | | | |
| | N (%) | N (%) | | | |
| Age group (years | | | | | |
| <30 | 80 (38.5) | 137 (44.9) | | | |
| 30-39 | 63 (30.3) | 76 (24.9) | | | |
| 40-49 | 49 (23.6) | 72 (23.6) | | | |
| >50 | 16 (7.7) | 20 (6.6) | | | |
| Gender | | | | | |
| Male | 25 (12) | 36 (11.8) | | | |
| Female | 183 (88) | 269 (88.2) | | | |
| Education | | | | | |
| B. Comm. H | 12 (5.8) | 11 (3.6) | | | |
| RHA/CHA | 6 (2.9) | 7 (2.3) | | | |
| BNSc | 19 (9.1) | 23 (7.50 | | | |
| Diploma in | | | | | |
| nursing | 64 (30.8) | 92 (30.2) | | | |
| Diploma in | 67 (32.2) | 91 (29.8) | | | |
| midwifery | 07 (32.2) | 91 (29.6) | | | |
| LHV | 11 (5.3) | 15 (4.9) | | | |
| PHS-1 | 3 (1.4) | 3 (1.0) | | | |
| PHS-2 | 26 (12.5) | 60 (19.7) | | | |
| Department | | | | | |
| Public health | 131 (63) | 195 (63.9) | | | |
| Medical care | 77 (37) | 110 (36.1) | | | |
| Title | | | | | |
| HA-1 | 4 (1.9) | 4 (1.3) | | | |
| THN/Sister | 11 (5.3) | 14 (4.6) | | | |
| HA | 13 (6.3) | 14 (4.6) | | | |
| Nurse | 72 (34.6) | 103 (33.8) | | | |
| LHV | 14 (6.7) | 15 (4.9) | | | |
| PHS-1 | 3 (1.4) | 3 (1.0) | | | |
| MW | 65 (31.3) | 89 (29.2) | | | |
| PHS-2 | 26 (12.5) | 59 (24.0) | | | |
| Others | 0 (0.0) | 4 (1.3) | | | |
| Length of service | es (years) | | | | |
| 1-5 | 55 (26.4) | 98 (32.1) | | | |
| 6-10 | 49 (23.6) | 70 (23.0) | | | |
| 11-15 | 29 (13.9) | 41 (13.4) | | | |
| 16-20 | 35 (16.8) | 42 (13.8) | | | |
| 21 & above | 40 (19.2) | 54 (17.7) | | | |
| Self-medication | | | | | |
| Yes | 111 (53.4) | 165 (54.1) | | | |
| No | 97 (46.6) | 140 (45.9) | | | |
| Self-antibiotics medication | | | | | |
| Yes | 49 (23.6) | 68 (22.3) | | | |
| No | 159 (76.4) | 237 (77.7) | | | |
| Overall | | | | | |
| prevalence | 208 (51.4) | 305 (75.3) | | | |

The most frequent self-medicated medicine was analgesics (86.8%, N=203) followed by antibiotics (61.5%, N=114), cold and cough medicines (47%, N=110), vitamins, minerals, energizers and dietary supplements (41%, N=96), gastro-intestinal drugs (40.6%, N=95) and antihistamines (30.3%, N=71).

In this report, the further drugs frequently used for self-medication were antihypertensive (7.7%, N=18), contraceptive medicines (6.8%, N=16), herbal drugs and distillates (5.6%, N=13), and antidiabetics drugs (5.1%, N=12), and less frequently used drugs were antiasthmatic drugs (3.8%, N=9), cardiovascular drugs (2.2%, N=5), antidepressants (1.7%, N=4) and drugs for the treatment of hair and skin disorders (1.7%, N=4).

The most frequent consumed antibiotics for self-medication in this study included amoxicillin by 62 respondents (26.5%), azithromycin by 33 respondents (14.1%), the combination of ampicillin and cloxacillin by 27 respondents (11.5%), metronidazole by 27 respondents (11.5%), norfloxacin by 15 respondents (6.4%) and cephalexin by 14 respondents (6%) respectively and the lowest were injection gentamycin, fluconazole, flucloxacillin, and cloxacillin. All types of antibiotics consumed arbitrarily for self-medication were listed in (Table 3).

Reasons for self-medication

In this study, in the preceding three months, selfmedication had been practiced with the reasons: being healthcare providers (83.3%, N=195), convenience (82.5%, N=193), academic knowledge of the medicines (47.4%, N=111), academic knowledge of the symptoms (41%, N=96), considering the symptoms as minor (29.5%, N=69), advice from close supervisors or coworkers (25.2%, N=59), pre-experience (20.5%, N=48), old prescription (13.2%, N=31), acceptance of selfprescription (11.5%, N=27), no time to seek medical care of physician (11.5%, N=27) and believing the same prescription (6.8%, N=16). Less common reasons for practicing self-prescription also included: too much distance from physician clinic (3.4%, N=8), avoiding the crowd and waiting time (3.4%, N=8), availability of Internet (2.1%, N=5), advertisements (1.7%, N=4) and avoiding being a patient (1.3%, N=3). All reported reasons were presented in (Table 3).

Knowledge and perception towards self-medication

Out of 405 BHS, more than three-fourths (75.6%) was aware of "what is self-medication?" and the disadvantages of self-medication, only (24%) could describe the advantages of self-medication, about 28% did not know the meaning of OTC (over-the-counter), 78.5% could not choose the OTC drugs right, approximately 26% could not complete the full form of POM (prescription-only medicine), and 67.7% did not make the correct choice of POM drugs. Besides, 69.1% of

respondents could not give the correct answer for "whether OTC drugs require a prescription" and also

26.4% could not display the right answer for "whether POM drugs need a prescription".

Table 5: The influencing factors of self-medication among basic health staff (n=405).

| Influencing footons | Self-medication pra | Condo OD (050/ CI) | | | |
|---------------------------|---------------------|--------------------|----------------------------------|--|--|
| Influencing factors | Yes | No | Crude OR (95% CI) | | |
| Age group (years) | | | | | |
| Under 40 | 170 (72.6) | 120 (70.2) | 1.1 (0.7, 1.7) | | |
| 40 and above | 64 (27.4) | 51 (29.8) | 1.1 (0.7, 1.7) | | |
| Gender | | | | | |
| Male | 30 (12.8) | 19 (11.1) | 1.2 (0.6, 2.2) | | |
| Female | 204 (87.2) | 152 (88.9) | 1.2 (0.0, 2.2) | | |
| Education | | | _ | | |
| Graduates and above | 24 (10.3) | 18 (10.5) | 1.0 (0.5, 1.9) | | |
| Diploma and certificates | 210 (89.7) | 153 (89.5) | 1.0 (0.3, 1.9) | | |
| Department | | | | | |
| Public h ealth | 144 (61.5) | 115 (67.3) | 0.8 (0.5, 1.2) | | |
| Medical care | 90 (38.5) | 56 (32.7) | 0.8 (0.5, 1.2) | | |
| Designation | | | | | |
| Field supervisor | 34 (14.5) | 29 (17.0) | 0.8 (0.5, 1.4) | | |
| Field implementer | 200 (85.0) | 142 (83.0) | 0.6 (0.3, 1.4) | | |
| Length of service (years) | | | | | |
| <1-10 | 134 (57.3) | 96 (56.1) | 1.0 (0.7, 1.6) | | |
| Above 10 | 100 (42.7) | 75 (43.9) | 1.0 (0.7, 1.0) | | |
| Knowledge | | | | | |
| Good | 111 (47.4) | 97 (56.7) | 1.7 (0.5, 1.0) | | |
| Poor | 123 (52.6) | 74 (43.3) | 1.7 (0.5, 1.0) | | |
| Attitude | | | | | |
| Good | 165 (70.5) | 140 (81.9) | 0 % (0 0 0 0) thit | | |
| Poor | 69 (29.5) | 31 (18.1) | 0.5 (0.3, 0.9)** | | |

^{**=}p<0.01

In judging the overall knowledge level of self-medication, those BHS who obtained 50% and above of the total 46 points in 18 knowledge questions were considered as a good level. Here, the mean score of knowledge about self-medication was 22.3±9.1. Overall, 51.4% of BHS demonstrated good knowledge while 48.6% of them showed poor knowledge.

Regarding perception towards various aspects of selfmedication, the respondents believed that self-medication can lead to incorrect diagnosis (90.2%), wrong medication (89.3%), harmful effects following medication (74.6%), drug resistance (88.2%), treatment failure (75.1%), delayed effective medical care (89.8%), disease masking (83.4%), prolonged-course therapy (83.4%) and higher demand for newer expensive medicines (52.3%). The vast majority (92.6%) agreed that physician opinion should be sought if the disease conditions worsen or side effects appear during selfmedication and self-medication can relate to drug dependence and resistance. To determine the overall perception towards self-medication, there were 100 points in 20 questions. Those respondents awarded 84.3 points and above were considered as a good level of perception

and those below 84.3 points were considered as poor level. According to the overall perception score (mean± SD, 84.3±8.3), 75.3% of BHS had good perception while only 24.7% had poor perception. (Table 4) was constructed to present the distribution of knowledge and perception towards self-medication. The significant associations between self-medication practice and background characteristics of respondents were shown in (Table 5). No significant statistical difference was found between self-medication practice and age group, gender, education, the department where they are working, designation, length of service, and level of knowledge. However, a strong significant relationship was determined between self-medication practice and perception level (OR 0.5, 95% CI 0.3-0.9).

DISCUSSION

Currently, in Myanmar, newly up-to-date evidence of drug resistance and associated issues from empirical researches is importantly necessary for implementing Antimicrobial Resistance National Action Plan (ARNAP). However, there has been limited research evaluating the extent and nature of overuse and misuse of

medicines and exploring the awareness of drug resistance among different institutions. Especially, no research tries to investigate the trends of self-medication practices among BHS. As previously, in 2019, a Myanmar study of Moe-Thuzar and Pyae-Linn-Aung conducted in rural Hlaing Tharyar, Yangon revealed that the majority (89.2%) of the rural labor force practiced self-treatment and this practice was significantly related to their poor knowledge and perception.²⁴ In 2020, another crosssectional study of Aung Zin focused on patients and their knowledge, belief, and behavior regarding medication.²⁵ These two studies discussed promoting health education intervention activities and responsible self-medication. This present study tried to answer the two main questions "what is the prevalence rate of selfmedication practice among BHS and which conditions cause them to be self-medicated?" In this regard, this study is different from the previous Myanmar studies in terms of the study area, population, and objectives. Hopefully, this study result would be new and up-to-date information necessary for how to manage the characteristics of self-medication among BHS during the ongoing implementation of ARNAP. As reported by this study, more than half (57.8%) of BHS practiced selfmedication. This prevalence is comparable across recent similar studies conducted in Kenya (60.4%) and in Ethiopia (54.6%).^{26,27} When trying to compare selfmedication prevalence between different healthcare professions, this observed proportion is very close to the proportions observed among dentists from India (67%), doctors from Finland (61%), physicians from British (66%) and India (56.73%). 26-30 This situation shows, across the globe including Myanmar, more than half of healthcare professionals have been trying to make administration of self-administered medicines on selfdiagnosed disorders without taking another professional advice. However, this reported prevalence is relatively high when compared with prevalence reported in the similar study population of other countries: Togo (38.7%), Jordan (48.2%), and Rio de Janeiro (24.2%). 31-33 This may be due to the effect of study origin and sample size, but this high prevalence indicates that Myanmar still needs to enforce National drug control policy, strengthen the drug-related harm reduction approach, and encourage seeking a doctor's advice.

Furthermore, this study proved that there is a difference in self-medication practice between healthcare workers and other populations. When comparing the prevalence rates of self-medication of general population from the studies of other countries, the higher proportions occurred among the University students in Bangladesh (100%), Pakistan (95.5%), Hong Kong (94%), Nigeria (91.4%), and Gujarat (88%) and also among the general population of United Arab Emirates (89%), Nigeria (87%), and Sweden (72%).³⁴⁻⁴¹ These differences may be because healthcare professionals are more knowledgeable about the disadvantages of self-medication and more accessible to medical consultations with physicians than non-healthcare professionals and the general public.

Moreover, the poor attitude of the general public towards the impact and danger of self-prescription might attribute to more practice on self-medication. This study revealed that the most common illnesses that contribute to selfmedication among BHS were colds, pains in the head and throat, giddiness, symptoms relating to the stomach, intestines, muscles, and skeletons, and raise blood pressure. In a recent study from Kenya, the healthcare workers who had self-medicated mentioned similar symptoms such as fever, abdominal discomfort, headache, migraine, joint, and muscle pain, running nose²⁶. Besides, these medical conditions were also reported in similar Ethiopian studies as the main illnesses for self-medication. Frequently, healthcare workers consider that these disease conditions are minor and do not need a special consultation and further medical checkup.^{27,42} In this regard, this study can denote that the symptoms of illness they self-medicated are less serious and their self-consuming of medication depends on their abilities.

When addressing the common disease conditions of selfmedication among BHS, this study reported that NSAIDs (non-steroidal anti-inflammatory drugs), antimicrobial drugs, antacids, proton pump inhibitors, histamine2 blockers, cough and cold medicines, multivitamins, and dietary supplements, and antihistamines are the most commonly used drug types. However, these categories of drugs might be dependent on the illnesses of the BHS within the last three months. Like this study, many previous studies have reported the same categories of medicines. ^{26,27,42} In Myanmar, the BHS is available these reported categories of medicines within the context of health departments where they are operating at all times. Moreover, the BHS can purchase the different types of prescription-only medicines without a physician's prescription.⁴³ Thus, this study can conclude that easy access to a large number of drug types influences selfmedication patterns of BHS. Actually, these issues may be the critical reasons for the contribution of irrational drug use. Obviously, it is a necessary issue to make better advocacy with BHS on the vital impacts of irrational drug use and the increased emergence of drug resistance and dependence.

At present, in Myanmar, many antibiotics including amoxicillin, ampicillin, and norfloxacin are not suitable for killing some germs. 44 Meanwhile, these antibiotics are mentioned as the second-highest used medicines and also the most frequently used self-medicated antibiotics in this study. This condition indicates that the BHS tries to take antibiotics for every disease condition and their perceptions towards antibiotics resistance deem poor. Therefore, this study alarms that irrational antibiotics use among BHS may be an important cause of the emergence of the above-mentioned antibiotics resistance in Myanmar.

Regarding reasons for self-medication among BHS, personal, organizational, and environmental causes are

identified in this study. In personal factors, knowledge, skills, and experiences in symptom analysis and treatment options, and acceptability to self-prescription are mentioned as the influence of their self-medication. In organizational factors, high availability of medicines for self-medication at working sites due to lack of regular data quality or medical audit, and ease of purchase for a large number of prescription-only medicines at community pharmacies without showing a physician's prescription due to weak enforcement of drug law and regulations are examined as the key drivers of selftreatment. A review of Thein Hlaing and Thant Zin demonstrated that most BHS from low and middle income countries have very limited time to participate in socially-productive activities due to unreasonable workload within the healthcare structure.⁴⁵ Here, excessive job demand of the BHS is an important organizational factor that relates to a short amount of time for consulting with a physician, which in turn contributes to self-medication behaviors.

As an environmental factor, the availability of a multitude of evidence relating to information about diseases diagnosis and treatment guidelines via the Internet, advertisements, and peers are also determined as the important player for practicing self-prescription. The previous studies on the healthcare workers from other countries could identify these similar reasons. 23,27,42,46 A recent qualitative study demonstrated that the Internet becomes the major driver of practicing self-medication and it enables the health workers to comprehend the differentials of diagnosis and treatment plans and to make a choice of suitable treatment options for their selfmedication. Because of that, the health workers believe that their self-medication is safe and similar to a physician's prescription.⁴⁷ However, many possible reasons for self-medication behavior among BHS can be behind this revelation. As an important note, despite being a health professional, self-diagnosis and the taking of medicines without a doctor's or physician's advice frequently relates to a greater probability of negative health consequences, unqualified health care, and poor health outcomes.⁴⁸

Regarding the knowledge level of BHS about selfmedication, the result showed that more than threefourths were aware of self-medication, but about half of the total had insufficient knowledge about several aspects of self-medication. No association between knowledge level and self-medication practice is noted in this study and therefore there was a controversy over this finding between this study and other similar studies.^{27,42} An Ethiopian study pointed out treating self-diagnosed disease conditions with insufficient knowledge can be harmful even for mild condition.⁴² In determining the BHS' perception, the majority agreed that selfprescription without proper medical guidance can be the potentials of several negative consequences. An association was found between perception level and selfmedication practice. Evidence showed that BHS who has poor perception towards disease complications and adverse reactions of drugs may be more likely to practice self-medication than those who have good perception. Many published studies reported that most health workers have a positive attitude towards self-medication. 42,49,50,51 In fact, instead of overemphasizing the activities that try to address the BHS's perception towards responsible self-medication, the Myanmar technical working groups may require to advocate the BHS for following the national treatment guidelines and drug policy and to promote their comprehensive knowledge about drug safety, quality, and rational usage.

CONCLUSION

This cross-sectional study reports that there is a high prevalence of self-medication among BHS. The result of this study shows that the BHS frequently self-treats due to easy access to medicines and trusting in their own knowledge about disease symptoms and essential medicines. In this result, pain relievers and antibiotics are noted as the first and second frequently used selfmedicated medicines and two main sources of these medicines are the outpatient departments and community drug outlets. This study result proves that BHS needs to be more comprehensive about safety, regulations, and rational use of medicines. This study recommended that the Myanmar technical working groups should enforce the National medicine policy and establish the regular inspection of departmental drug stores and drug-retail outlets on the distribution and sales of prescription medicines. Also, more researches should be carried out to determine the different characteristics of self-medication practices among university students, medical students, the general public, and volunteer health workers.

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