Research Article
Self-Medication Practices among the Adolescent Population of South Karnataka, India

Edlin Glane Mathias, Anjalin D’souza, and Savitha Prabhu

1Manipal College of Nursing, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka, India
2Department of Child Health Nursing, Manipal College of Nursing, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka, India
3Department of Mental Health Nursing, Manipal College of Nursing, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka, India

Correspondence should be addressed to Anjalin D’souza; anjeline.d@manipal.edu

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1. Introduction
Self-medication practice (SMP), an element of self-care, is the consumption of medication without being prescribed by the healthcare professionals (e.g., resubmitting old prescriptions, sharing medication with relatives/family members, or using leftover medications) for the treatment of self-recognized illnesses [1]. Concerns about the practice of self-medication (SM) are based on associated risks such as adverse drug reactions, disease masking, inaccurate diagnosis of disease, increased morbidity, drug interactions, wastage of healthcare resources, and antibiotic resistance. The World Health Organization (WHO) has defined self-medication as the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of prescribed drugs for chronic or recurrent disease or symptoms [2]. Self-medication thus forms a significant vital portion of self-care, which can be defined as the chief public health resource in the healthcare system. It includes self-medication, nondrug self-treatment, social support in illness, and first aid in every day

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life. According to William Osler, a great feature which distinguishes man from animals is the desire to take medicine [3]. In 1995, the WHO expert committee on National Drug Policies (NDP) stated “self-medication is widely practiced in both developed and developing countries. Medications may be approved as being safe for self-medication by the national drug regulatory authority. Such medicines are normally used for the prevention or treatment of minor ailments or symptoms, which do not justify medical consultation. In some chronic or recurring illnesses, after initial diagnosis and prescription, self-medication is possible with the doctor retaining an advisory role” [4]. Not much is known about health-related problems and healthcare utilization, including self-medication among young adults. The youth are highly influenced by the media and the Internet, which promotes self-medication behavior. The increased advertising of pharmaceuticals poses a larger threat of self-medication to the younger population in general. This raises concerns about incorrect self-diagnosis, drug interaction, and the use of drugs other than for the original indication. The increase in the quantities and varieties of pharmaceuticals worldwide eases the accessibility of medicine by consumers, thereby giving options for its misuse. A study from Nigeria has observed self-medication as a common practice among a group of health workers that included dental, midwifery, and nursing students. It has been suggested that self-prescription is also prevalent among practicing physicians [5].

Through the literature review, it is clear that most of the adolescents choose self-medication. The researcher identified that there are limited studies that have been conducted on preuniversity college adolescents among South Karnataka. Hence, there was a need to recognize the prevalence of self-medication among adolescents and identify the commonly used drugs and the factors associated with self-medication, which helps the health professionals to focus the attitude of adolescents towards self-medication and take appropriate actions.

2. Materials and Methods

A descriptive cross-sectional survey was conducted among 220 adolescents studying in three different preuniversity colleges of Udupi District, Karnataka, in January 2016 (one month). The colleges had different streams of subjects such as science, commerce, and arts. Participants were selected based on cluster sampling (the entire class was taken as a cluster).

The sample size was calculated based on the pilot study findings, where relative precision was kept 10% of proportion, and anticipated precision was 0.83%; cluster effect of two was applied. The approximate sample size taken was 220. Ethical permission was obtained (IEC 680/2015) for conducting the study. Formal written permission from the college authority, written consent from the parents, and assent from the participants were obtained before the study. The purpose of the study was explained to the participants, and the confidentiality of the information was maintained. The researcher presented questionnaires to the participants, and they took thirty minutes to complete the task. Data collected were entered and statistically analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0. The sample characteristics, prevalence, and associated factors were described using frequency and percentage. A chi-square test was used to find the association between the prevalence of self-medication and demographic variables.

2.1. Sample Size. The sample size was calculated using the following formula:

\[ n = \frac{(Z_{1-\alpha/2})^2 pq}{(\epsilon p)^2} \]

where \( n \) = minimum sample size required, \( p \) = anticipated prevalence of self-medication, \( q = 1 - p \), \( \epsilon \) = relative precision, \( \epsilon p \) = margin of error, \( \phi = 0.83 \) (83%), \( q = 1 - p \) (0.83 = 0.17), and \( \epsilon = 10\% \) of \( p \). For cluster sampling, sampling size \( \times \) design effect = 78.67 \( \times \) 2 = 157.34.

2.2. Description of the Tool. Tools used for the study were demographic pro forma and self-medication assessment tool. These tools were developed by the researchers. The demographic tool consisted of 12 items, and the self-medication assessment tool consisted of 26 items. The tools were validated by seven experts, and the reliability of the tool in English was assessed using the test-retest method and was found to be 0.8. The tool was translated to Kannada because the medium of education for some colleges was in the Kannada language; the reliability of the tool in Kannada was found to be 0.8.

2.3. Statistical Analysis. Data collected were entered and statistically analyzed using the Statistical Package for Social Sciences (SPSS), version 16.0. The sample characteristic, prevalence, and associated factors were described by using frequency and percentage. A chi-square test was used to find the association between the prevalence of self-medication and demographic variables.

3. Results

3.1. Distribution Based on Sociodemographic Variables (\( N = 220 \)). The total number of adolescents selected for the study was 220. In this study, 173 (78.6%) adolescents were found to be practicing self-medication, out of which 123 (55.9%) of them were females and 147 (66.8%) were males. The majority of the adolescents (197 (89.5%)) belonged to the rural area, 142 (64.5%) belonged to the nuclear family, and 175 (79.5%) adolescents reported that the distance from the nearest medical store was 1–4 km (Table 1).

3.2. Distribution of Commonly Used Drugs as Self-Medication (\( N = 173 \)). The prevalence of self-medication was found to be 78.6%. The adolescents who had taken self-medication were further analyzed for specific drugs they had taken. Most of the adolescents took antipyretics (147 (66.8%), followed by antitussives (120 (54.5%)) and lastly analgesics (86 (39%)) (Figure 1).
3.3. Distribution of Practices of Using Self-Medication (N: 173).
It was also reported that, among 173 adolescents, 110 (63.5%) adolescents preferred the allopathic system of medicine, and 110 (63.5%) preferred tablets. It was surprising that 52 (30%) adolescents had taken self-medication for a month. Among 173 adolescents, 52 (30.0%) had checked the expiry dates at the time of purchase, and the adolescents remembered the brand name while buying the drug. Among the 173 adolescents, 81 of them (46.9%) consulted a physician while treating the illness (Table 2).

3.4. Distribution of Adverse Effects due to Self-Medication (N: 24).
Adolescents also experienced few adverse effects due to self-medication; 9 (5.2%) of them reported headache, 2 (2.8%) allergy, and 4 (2.3%) diarrhea (Table 2).

3.5. Distribution of Drugs Stored at Home (N: 162).
Commonly stored drugs at home were as follows: Tab. Calpol 44 (27.3%) and Panadol 36 (22.4%) and syrup Benadryl 15 (9.2%) (Table 2).

3.6. Distribution of Reason for Using Self-Medication (N: 173).
The majority of adolescents (102 (59.2%)) reported the reason for taking self-medication was severe illness, and at that moment, they were not able to visit any doctor; 35 (20.2%) had self-medicated because of their busy schedule, and 7 (4.0%) had referred the previous prescription. Most of the adolescents (89 (51.7%)) also informed that the source of information was parents and 42 (24.2%) from mass media (Table 3).

3.7. Distribution of Association between Self-Medication and Selected Variables (N: 173).
The study further revealed that there is a significant association between the use of self-medication and the family background ($\chi^2 = 9.615, p < 0.05$), father's education ($\chi^2 = 13.791, p < 0.05$), and mother's education ($\chi^2 = 14.633, p < 0.05$) (Table 4).

3.8. Other Findings. Antipyretics were consumed by 147 adolescents, and the reason stated by 86 (58.5%) was emergency, 7 (4.76) minor illness, and 35 (23.8%) hectic schedule; 6 (4%) stated that doctor consultation fee is expensive, 6 (4%) symptom was severe, 3 (2%) state that clinic is far away, and 2 (1.36%) do not remember the reason, but the maximum days taken were 1–3 days; most of the adolescents (38 (25.8%)) had consumed Tab. Calpol.

Antitussives were utilized by 120 (69.30%) adolescents, and the reasons stated were emergencies by 56 (46.6%), parental advice by 29 (24.2%), and hectic schedule by 35 (29.1%). The maximum days they self-medicated were 1–5 days, and most of the adolescents had utilized syrup Benadryl (25.8%).

Analgesics were taken by 86 (50%) adolescents, and the reason stated was emergency by 86 (58.5%) was emergency, 7 (4.76) minor illness, and 35 (23.8%) hectic schedule; 6 (4%) stated that doctor consultation fee is expensive, 6 (4%) symptom was severe, 3 (2%) state that clinic is far away, and 2 (1.36%) do not remember the reason, but the maximum days taken were 1–3 days; most of the adolescents (38 (25.8%)) had consumed Tab. Calpol.
6 (10.3%), and difficulty in getting doctor appointment by 6 (10.3%), and 8 (13.7%) reported the distance of pharmacy being far away. The study further revealed that most of the adolescents (48 (82.7%)) had taken antiemetics for just 1 day, and the drug was Tab. Domstal 25 (43.1%). It was observed that 46 (26.50%) adolescents had taken antacids, 30 (17.30%) antiallergics, 20 (12%) antidiarrheals, and 4 (2.4%) had taken antibiotics without consulting any doctor. Antacids and antiallergics were consumed for 1–3 days while antibiotics for a month by two adolescents (tablet cefixime 200 mg).

4. Discussion

4.1. Prevalence of Self-Medication. The findings of this study show that, among 220 adolescents, the majority of the adolescents (197 (89.5%)) belonged to the rural area. 173 (78.6%) adolescents were found to be practicing self-medication; out of which, 123 (55.9%) of them were females and 147 (66.8%) were males. A study in Puducherry showed the prevalence was as high as 71% [3]. A study in urban Delhi showed that the prevalence of self-medication among those who had suffered some illness episodes in the past 1 month was 31.3% [6]. Another study in an urban slum showed that the self-medication was practiced by 34.5% of respondents and prevalent among all the age groups [7]. A recent study from Sri Lanka had reported 12.2% and 7.9% prevalence of self-medication to allopathic drugs from an urban and rural area, respectively, two weeks prior to the interviews [8]. The study from South Africa had shown a very high prevalence of self-medication (93–98%) [9]. However, all these studies had taken accountable types of drugs including homeopathy or other Indian system-related drugs. The studies on self-medication practices among medical students in Accra, Ghana, showed higher prevalence rates [10].

4.2. Commonly Used Drugs for Self-Medication. The present study shows that most of the adolescents (147 (66.8%)) took antipyretics, followed by antitussives (120 (54.5%)) and antidiarrheals (58 (33.5%)). 26.50% (46) and 17.30% (30) of the students had taken antibiotics without consulting any doctor. The most used antibiotics were tetracycline (34.2%), amoxicillin (28.9%), and metronidazole (18.4%) among the respondents. A similar report was found in another study as well [11]. Paracetamol (75.1%) was the most used drug among the students. Similar reports were found in other studies as well [12]. Tetracycline (32.4%), amoxicillin (28.9%), and metronidazole (18.4%) were the most used antibiotics. Studies also reported that ampicillin and amoxicillin were the most self-medicated drugs among students [13]. One-third (33%) of the students reported using antimalarial drugs without prescription. Artemether/lumefantrine (37%), artemether (21%), and sulfadoxine/pyrimethamine (16%) were the most commonly used antimalarial drugs. Self-medicated antimalarial use was also reported to be prevalent in some studies among tertiary institution students [14]. Self-medication practices with antibiotics
in some studies were mostly reported to be for urinary tract infection, sore throat, gastrointestinal ailments, and cough [15].

4.3. Factors Associated with/Promoting Self-Medication. This study also portrays that the adolescents also experienced few adverse effects due to self-medication such as headache reported by 9 (5.2%); 2 (2.8%) reported allergy, and 4 (2.3%) reported diarrhea. This finding was supported by studies conducted in Meket, Ethiopia, China, southern India, and Nigeria. The possible justification might be due to the inability of the participants to afford healthcare fees and lack of time to consult healthcare professionals. Therefore, improving the perception of participants about the quality of healthcare services, creating awareness, and managing peer pressure may reduce self-medication practices [16]. A study in Porto Alegre/RS (Southern Brazil) showed that almost 80% of those who practiced self-medication was influenced by laypeople, with the vast majority being recommended by friends or family members, with the self-medication being an occasional use. There are indications that self-medication is associated with stocks of medicine at home, 

Table 2: Distribution of practices of self-medication (N: 173).

| Sample characteristics | Frequency (f) | Percentage (%) |
|------------------------|--------------|----------------|
| Treated continuously with self-medication (n = 52) | Yes | 52 | 30.0 |
| Duration of treating with self-medication (n = 52) | 1–4 days | 17 | 9.8 |
| | 5–8 days | 35 | 20.3 |
| Expiry date verification | Yes | 52 | 30.0 |
| | No | 121 | 70.0 |
| Verification of expiry dates (n = 52) | After consumption | 12 | 23.0 |
| | Before taking | 31 | 59.7 |
| | Forgot | 2 | 3.84 |
| | Time of purchase | 7 | 13.5 |
| Reading instructions in the medicine package | Always | 101 | 58.5 |
| | Sometimes | 70 | 40.4 |
| | Never | 2 | 1.1 |
| Adverse events (n = 24) | Allergy | 5 | 2.8 |
| | Diarrhea | 4 | 2.3 |
| | Headache | 9 | 5.2 |
| | Rashes | 2 | 1.1 |
| | Vomiting | 4 | 2.3 |
| Medications stored at home (n = 162) | Syrup Alex | 11 | 6.7 |
| | Syrup Benadryl | 15 | 9.2 |
| | T. Paracetamol | 44 | 27.3 |
| | T. Panadol | 36 | 22.4 |
| | T. Grenil | 2 | 1.2 |
| | T. Combiflam | 6 | 3.7 |
| | T. Metacin | 4 | 2.4 |
| | Do not remember | 44 | 27.3 |

Table 3: Distribution of reason for using self-medication (N: 173).

| Sample characteristics | Frequency (f) | Percentage (%) |
|------------------------|--------------|----------------|
| Reasons for taking self-medication | Hectic schedule | 35 | 20.2 |
| | Doctor consultation is costly | 6 | 3.4 |
| | Distance of clinic is far | 11 | 6.4 |
| | Emergency conditions | 102 | 59.2 |
| | Difficulty in controlling the symptoms | 3 | 1.7 |
| | Minor illness | 7 | 4.0 |
| | Advice of mother/parent | 7 | 4.0 |
| | Do not remember | 2 | 1.1 |
| Source of information | Mass media/social network | 42 | 24.2 |
| | Friends | 11 | 6.3 |
| | Parents | 89 | 51.8 |
| | Pharmacist | 17 | 9.8 |
| | Previous prescription | 7 | 4.0 |
| | Books | 5 | 2.8 |
| | Do not remember | 2 | 1.1 |
| Siblings advice for self-medication | Yes | 58 | 33.5 |
| | No | 115 | 66.5 |

Table 4: Distribution of association between self-medication and selected variables (N: 173).

| Variables | Use of self-medication | | | | |
|-----------|-------------------------|---------|---|---|---|
| | Using (f) | Not using (f) | χ² | df | p value |
| Age in years | 16 | 50 | 12 |
| | 17 | 91 | 29 | 1.413 | 2 | 0.493 |
| | 18 | 32 | 6 |
| Gender | Male | 80 | 17 |
| | Female | 93 | 30 | 1.514 | 1 | 0.143 |
| Area of living | Rural | 153 | 40 |
| | Urban | 20 | 7 | 1.172 | 1 | 0.230 |
| Type of family | Extended | 17 | 7 |
| | Joint | 44 | 10 | 9.615 | 2 | *0.008 |
| | Nuclear | 112 | 30 |
| Education of father | No formal education | 8 | 6 |
| | Primary | 76 | 10 | 13.791 | 5 | *0.017 |
| | High school | 48 | 17 |
| | Preuniversity | 27 | 8 |
| | Graduate | 14 | 6 |
| Education of mother | Primary | 74 | 15 |
| | High school | 56 | 10 |
| | Preuniversity | 30 | 8 | 14.633 | 4 | *0.005 |
| | Graduate | 8 | 6 |
| | Postgraduate | 5 | 8 |

*Significant at 0.05 level.
which can facilitate this risky behavior of self-medication for health-related problems [17].

5. Limitation

In this study, the analysis was based on self-analysis with the possibility of over- or underreporting. With the questionnaire provided by the researcher, only limited information was captured.

6. Conclusion

In conclusion, our findings demonstrated that the prevalence of self-medication was high among adolescents. Most of the drugs were stored at home and consumed by referring to previous prescriptions. It is important to educate the public and provide counseling to adolescents regarding the risks of taking self-medication.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare there are no conflicts of interest associated with this study.

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