Prevalence, knowledge and associated factors on self-medication practice among the community of Lalitpur Metropolitan City, Nepal: a cross-sectional study

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ABSTRACT

Self-medicine has become one of the important components in day-to-day life to treat mild ailments. If not used rationally, it may lead to serious public health issues. The aim of this study is to explore the prevalence, knowledge, and associated risk factors of self-medication practice among the community of the Lalitpur Metropolitan City of Nepal. A cross-sectional community based prospective study was conducted among 1,004 participants of the Lalitpur Metropolitan City using a pretested and validated questionnaire. The collected data were analyzed using descriptive and inferential analysis with an alpha level of 0.05 by using SPSS. The prevalence of self-medication was 45.20%. The three most common ailments for practicing self-medication were fever, headache, and cough/cold. The top reason for self-medication was minor illness. The study indicated that overall knowledge scores were significantly associated with self-medication (P<0.001). Multiple logistic regression showed the elderly are more oriented towards self-medication practice [AOR=5.22 (95%CI: 2.73-9.98)]. The health professional families have a high affinity towards self-medication practice [AOR=2.82 (95%CI: 1.68-4.75)]. Likewise, storing medicine at home [AOR= 7.01 (95%CI: 5.10-9.64)] and poor knowledge of medicine use were [AOR=1.81 (95%CI: 1.14-2.88)] more likely to prefer self-medication. The prevalence of self-medication was high, mostly due to the poor knowledge about appropriate medicine used. Self-medication is unavoidable in many situations; therefore, implementation of action plans to improve awareness about the consequences of self-medication is needed, thus facilitating its responsible use by the community.

INTRODUCTION

No one should be deprived of the medical treatment one should receive. However, it is not true, especially in developing countries, where access to health care is difficult and unaffordable, leading to self-medication (Shankar et al., 2002). World Self-Medication Industry and World Health Organization (WHO) have recognized self-medication (SM) as the key aspect of primary healthcare with an aim to increase accessibility and affordability of medication (WHO, 1998; WSMI, 2010). SM being...
a part of self-care where people use medicine for themselves in order to prevent disease or maintain health (WHO, 1998). It is defined as using the medicine by individuals to treat self-recognized ailment without the prescription of the licensed medical practitioner (WHO, 1998). The irrational practice of medicine may lead to various unwanted effects ranging from wastage of resources, resistance towards microorganism, adverse effect and prolongs suffering (Bennadi, 2014). Moreover, it will increase the treatment cost (Ali, 2015).

The prevalence of SM has increased worldwide and its share is high, mostly in developing countries (Shankar et al., 2002; Kassie et al., 2018). In developing countries, prevalence varies from 8.3% to 87% (Parulekar et al., 2016). In the case of Nepal, few studies conducted in different regions of the country reported a prevalence rate in the range of 38.2% to 94.9% (Paudel and Aryal, 2020; Parajuli et al., 2019; Baral et al., 2019). The willingness of SM practice has been attributed to the unaffordability of treatment, easy access to medicine, the time factor, unawareness, previous experience, etc. (Karmacharya et al., 2018).

Inadequate knowledge about medicine use may influence the rate of misuse by the community. This further leads to serious consequences like adverse drug reaction, delayed in diagnosis due to incorrect treatment choice, interaction, risk of dependence etc. (WHO, 1998; Atsbeha and Suleyman, 2008).

Taking into account of high prevalence rate and lack of studies on self-medication among the general population of the country, this study investigates the prevalence, knowledge and associated factors of SM practice among the community of the Lalitpur Metropolitan City of Nepal. The findings of the study are expected to guide the policymakers while developing a strategy on educating and increasing awareness of the public on self-medication and its responsible use in the country.

**METHODOLOGY**

A semi-structured questionnaire based on a cross-sectional community based prospective approach was used for the survey among the households in the community from September to December 2019 with a recall period of three months. The study population comprised adults above 18 years of age and who had been residing in the city at least for six months.

The sample size was calculated by using the single population proportion formula following (Shankar et al., 2002):

\[ N = \frac{Z^2 \times PQ}{B^2} \]

Where \( N \) is the sample size, \( Z \) is the standardized normal distribution value at 95% confidence interval level, i.e. 1.96, \( P \) is the proportion of SM, i.e. 59%, \( Q=100-59=41 \), and \( B \) is the margin of error taken as 5.2%.

\[ N = 987 \]

The final sample size was 1,004, with approximately 2% contingency considered.

A pre-tested semi-structured questionnaire was developed to assess the prevalence of SM among the population, their practices, the reason for practicing it without prescription, knowledge and their belief regarding SM and socio-demographic characteristics. Pretesting of the questionnaire was done among 50 participants. Minor modifications of the questionnaire were made after receiving feedback from experts and the pilot survey.

A probability proportionate sampling technique was used, resulting in a random selection of 17 out of the 29 wards of the city for a questionnaire survey among participants with their written informed consent. The dependent variables were self-medication and independent variables were socio-demographic characteristics like age, gender, marital status, education, income, occupation and knowledge regarding SM.

The knowledge regarding SM was analyzed using nine questionnaires generated from the extensive literature review and expert opinion. The reliability of the questionnaire was determined through Cronbach’s alpha, giving the value of 0.89 after the pilot study. Assessment of the population’s knowledge of SM was done by three possible response: "yes", "no", and "do not know". The item answered correctly was given "1" point and that with the incorrect answer was given "0" points which also includes "do not know". These are then added to get the total knowledge score as there was 9 statements, the knowledge score range from 0 to 9. To measure the level of knowledge of the population, it was further sub-categorized into “high-level knowledge” and “low-level knowledge”, for which the third quartile was used as a cut off point.

The collected data was enter and analyzed using SPSS version 21 (SPSS, Chicago, IL, USA). The association between the SM and different demographic characteristics were explored by using the Chi-square test. Logistic regression analysis was used to identify the factors that are associated with SM considering p values of <0.05 as statistically significant.

**Ethical Approval**

Ethical clearance was obtained from the Nepal Health Research Council (NHRC), Kathmandu, Nepal.
The participants were informed regarding the purpose of the study and all the data will be kept confidential. Written informed consent was taken from all individual participants who participated in the study.

RESULTS

Socio-demographic characteristics of the participants

1,004 study participants were involved from the Lalitpur Metropolitan City. The participants were of Nepalese origin and living in their respective places permanently or at least for six months. Most of the participants were female (51.1%) and the age group is dominated by 31-40 years (29.3%). Further, most participants were married (62.3%) and had attended at least a higher school level education (69.9%). The employment status was mostly services (45.6%), and the income group most (34.7%) lies in the range of NRs. 35,000-50,000 (USD 288-412). Detail regarding socio-demographic characteristics is given in Table 1.

Prevalence and practice of self-medication

It shows that there exists a significant prevalence of self-medication with 454 out of 1,004 household participants (45.2%) using SM. Most of the participants who practice SM usually take it to treat own-self (66.1%) and they mostly obtained medicine/s from a pharmacy store (68.3%). The study had shown that previous medication experience is the main source of information for self-medication (47.6%), followed by pharmacist advice (27.8%). Most participants practice self-medication for fever (17.8%), headache (13.4%), and cough/common cold (11.9%). Detail SM practices among the community are presented in Table 2.

Table 3 represents medicines commonly used, which consisted of group antipyretic (23.3%), antimicrobials (22.1%) and non-steroidal anti-inflammatory drugs (NSAIDs) (20.3%). Among them, the most common individual medicine use was paracetamol (23.1%) followed by anti-cold preparations (9.9%). Among the medicine used for SM, almost half of them were prescription medicines (47.2%). It shows that 40.4% of them stored medicine at home for emergency and future use.

Analyses were done to assess the preference of SM practice and the study found that two hundred and two participants (44.5%) practice SM as soon as symptoms arise, as shown in Figure 1. One hundred and forty-four (31.7%) preferred SM practice if the condition lasts for more than two days. Hundred and four participants had mentioned that they prefer SM practice for preventive measures.

Reasons for SM practice were analyzed and shown in Table 4. The most common reasons for SM practice were “minor illness” (n=419, 92.3%), “previous experience with same disease” (n=384, 84.6%) and “access to pharmacy” (n=363, 80%), “time saving” (n=361, 79.5%) and “money saving” (n=286, 63%).

Knowledge regarding the self-medication use

Of the nine statements measuring knowledge of appropriate use of SM, 3 were answered correctly by over 70% of the participant. The statement having the highest portion of correct responses was “Self-medication is medicating one-self without consulting a doctor for minor illness.” (89.9%) and the statement having the lowest response of correct answer was “In pregnancy, one should avoid self-medicate.” (5.8%). Table 5 lists the individual knowledge of self-medication among the community. Finally, the overall knowledge of the respondents indicated poor knowledge (71.2%) about the appropriate SM practice.

Factors associated with Self-medication use

Chi-square test shows the following factors consisting of the participant’s age (p= <0.001), marital status (p=0.025), education level (p= 0.001), employment status (p=0.001), income per month (p=0.001), storing practice of medication (p=0.001) and family belonging to a health professional (p=0.001) were significantly associated with SM.

Similarly, the binary logistic analysis also shows the association of the participant’s age, education, employment status, income, family belonging to a health professional, medicine storing practice and knowledge about the medical use with SM practice [Table 6].

The age group of 41-50, 51-60 and above 60 years had an odds ratio of COR=2.04 (95% CI:1.38-3.01), COR= 3.27 (95% CI:2.15-4.97) and COR=6.02 (95% CI:3.67-9.88) respectively, which indicates that as the age increases, there is the likelihood that SM practice also rises. Married participates more likely to practice self-medicate than unmarried participants with the odds ratio of COR=1.4 (95% CI:1.09-1.87).

The study participants who have a monthly income of <5,000 were 4.03 times more likely to practice SM than those with a monthly income of more than 50,000. This indicates that the lower the monthly income, the more chances of practicing self-medication. On the contrary, those study participants whose education background is school level
Table 1: Socio-demographic characteristics of participants among the community of Lalitpur Metropolitan City from September to December 2019.

| SN. No. | Demographic Characteristics                        | Frequency | Percentage (%) |
|---------|---------------------------------------------------|-----------|----------------|
| 1       | Gender                                            |           |                |
|         | Male                                              | 491       | 48.9           |
|         | Female                                            | 513       | 51.1           |
| 2       | Age in years                                      |           |                |
|         | 18-30                                             | 245       | 24.4           |
|         | 31-40                                             | 294       | 29.3           |
|         | 41-50                                             | 193       | 19.2           |
|         | 51-60                                             | 156       | 15.5           |
|         | >60                                               | 116       | 11.6           |
| 3       | Marital status                                    |           |                |
|         | Single                                            | 340       | 33.9           |
|         | Married                                           | 625       | 62.3           |
|         | Separated                                         | 15        | 1.5            |
|         | Divorced                                          | 11        | 1.1            |
|         | Widow/widower                                     | 13        | 1.3            |
| 4       | Education level                                   |           |                |
|         | Illiterate                                        | 57        | 5.7            |
|         | School-level                                      | 248       | 24.7           |
|         | High school level                                 | 290       | 28.9           |
|         | University graduates                              | 412       | 41             |
| 5       | Current employment status                         |           |                |
|         | Unemployed (Housewife, Jobless, student)          | 147       | 14.6           |
|         | Business                                          | 291       | 29             |
|         | Service (Government and Private)                  | 458       | 45.6           |
|         | Others (Retired, Daily wages, Housemaid)          | 108       | 10.8           |
| 6       | The income per month (in Nepalese currency)       |           |                |
|         | >50000                                            | 187       | 18.6           |
|         | <50000-35000                                      | 348       | 34.7           |
|         | <35000-20000                                      | 271       | 27             |
|         | <20000-5000                                       | 146       | 14.5           |
|         | <5000                                             | 52        | 5.2            |
| 7       | Health Professionals                              |           |                |
|         | Yes                                               | 125       | 12.5           |
|         | No                                                | 879       | 87.5           |

COR=0.59 (95% of CI:0.43-0.82) and high school level COR=0.36 (95% of CI:0.26-0.50) were less likely to practice SM than university graduates. Likewise, the study participants who were related to health professional were more likely to practice SM by COR=2.60 (95% of CI:1.74-3.90) times than those who do not belong to health professionals.

Similarly, those who have a tendency to store the medicine at home had shown more likelihood of practicing SM by COR=7.19 (95% of CI:5.41-9.54) than those who do not store the medicine at home. The study also indicated that those participants who had a low level of knowledge regarding the medicine use were more likely to practice SM by COR=1.92 (95% CI:1.32-2.81) than those who had a high level of knowledge.

Finally, after obtaining statistically significant variables at p≤0.05 in binary logistic regression analysis, multiple regression analysis was carryout to see the independent predictor of SM practice of participants [Table 6]. Accordingly, those participants whose age were 41-50, 51-60 and above 60 years had an adjusted odds ratio (AOR) of 1.74 (95% CI:1.03-2.95), AOR=4.17
Table 2: Practices related to SM among the community of Lalitpur Metropolitan City from September to December 2019.

| Variables                          | Frequency | Percentage (%) |
|------------------------------------|-----------|----------------|
| Ownself                            | 399       | 66.1           |
| Spouse                             | 83        | 13.7           |
| Children                           | 53        | 8.8            |
| Other family members               | 42        | 7.0            |
| Other (Friends, colleague)         | 27        | 4.5            |
| **Medicine Obtained From**         |           |                |
| Pharmacy/ medicine store           | 310       | 68.3           |
| left-over-medicines                | 107       | 23.6           |
| Friends/ Family                    | 37        | 8.2            |
| **Source of information (multiple responses)** | | |
| Previous experience                | 216       | 47.6           |
| Pharmacist                         | 126       | 27.8           |
| Prescribers without the prescription | 88       | 19.4           |
| Friends/relatives/ neighbor        | 73        | 16.1           |
| Media/ promotional materials       | 14        | 3.1            |
| Internets                          | 7         | 1.5            |
| **Health problem/Symptom/s**       |           |                |
| Fever                              | 81        | 17.8           |
| Headache                           | 61        | 13.4           |
| Cough/common cold                  | 54        | 11.9           |
| Gastric/Abdominal Pain             | 41        | 9.0            |
| Tonsillitis                        | 28        | 6.2            |
| Toothache                          | 26        | 5.7            |
| Joint pain                         | 19        | 4.2            |
| Diarrhea                           | 18        | 4.0            |
| *Others                            | 87        | 19.2           |
| #Combination of Symptoms/illness   | 26        | 5.7            |
| Did not mentioned                  | 13        | 2.9            |

*Allergy, Asthma, Earproblem, Dysmenorrhea, Oral Contraception, Skin-Problem, UTI, Constipation, Hypertension #Fever and cough, Fever and allergy, Cough and abdominal pain, Toothache and infection, Cough and tiredness, Skin infections, contraception and dysmenorrhea, Diarrhea and abdominal pain, Joint pain and acidity, Common cold and fever, headache and abdominal pain, Cough and joint pain, common cold with sputum.

Figure 1: Percentage of participants showing medicines preferred for self-medication among the community of Lalitpur Metropolitan City from September to December 2019.
Table 3: Most commonly used medicine for self-medication among the community of Lalitpur Metropolitan City from September to December 2019.

| Variables                     | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Medicine used                 |           |            |
| Paracetamol                   | 105       | 23.1       |
| Anti-cold Preparation         | 45        | 9.9        |
| Paracetamol + Ibuprofen       | 34        | 7.5        |
| Azithromycin                  | 28        | 6.2        |
| Pantoprazole                  | 27        | 5.9        |
| Amoxicillin                   | 27        | 5.9        |
| Mefenamic Acid                | 17        | 3.7        |
| Oral-Contraception            | 13        | 2.9        |
| **Others**                    | 114       | 30.9       |
| Combination                   | 27        | 5.9        |
| Categories of medicine used   |           |            |
| Antipyretic                   | 110       | 23.3       |
| Antibiotics                   | 104       | 22.1       |
| NSAIDs                        | 96        | 20.3       |
| Anti-cold Preparation         | 50        | 10.5       |
| Medicine reducing acidy       | 42        | 8.9        |
| Antihistaminic                | 21        | 4.4        |
| Oral-Contraception            | 15        | 3.2        |
| ***Others**                   | 34        | 7.2        |
| Do not remember               | 13        | 2.9        |
| Prescription categories of Medicine |         |            |
| Non-prescription medicine     | 243       | 50.1       |
| Prescription-only medicine    | 229       | 47.2       |
| Drug not mention              | 13        | 2.7        |
| Storing medicine at home      |           |            |
| Yes                           | 406       | 40.4       |
| No                            | 598       | 59.6       |

**Nimesulide, Cetirizine, ORS, Naproxen, Ibuprofen, Ciprofloxacin Eye drop, Amoxicillin+Clavulanic Acid, Metronidazole, Cefixime, Salbutamol, Hysine Butylbromide, Diclofenac, Antacid, Levocetirizine, Omeprazole, Fexofenadine, Pyroxidine, Vitamin B complex, Hydrocortisone, Cholecalfierol, Ciprofloxacin, Tobramycin, Rabeprazole, Promethazine, Prednisolone, Lactulose, Isabgol husk, Doxycycline, Clobesterol, Amilodipine, Aceclofenac.**

***Antiasthamatic agents, Smooth muscle relaxant, Steroids, Cholecalfierol, Vitamins, Constipating agents, anti diarrheal agent.

(95% CI:2.41-7.22) and AOR=5.22 (95% CI: 2.73-9.98) respectively, indicating more likely to practice self-medication as age increases. High school graduates were less likely to practice self-medication than university graduates AOR=0.58 (95% CI:0.28-1.21).

The participants who have a tendency to store medicine were more likely to practice SM by AOR=7.01 (95% CI:5.10-9.64). Those who were related to health professional were more likely to self-medicate by AOR= 2.82 (95% CI:1.68-4.75). The participants who had a lower level of knowledge about self-medication were more likely to practice SM than those who have a high level of knowledge with AOR=1.81 (95% CI:1.14-2.88).

**DISCUSSION**

The prevalence of SM in this study was 45.2%. The prevalence rate was in agreement with earlier studies done in Nepal for Pokhara (38.2%) and Morang (44.04%) (Paudel and Aryal, 2020; Parajuli et al., 2019). The studies done in India showed a prevalence rate of 53.57% (Rashid et al., 2020) and that for Yemen reported as 77.3% (Alshakka et al., 2019). The global prevalence rate was reported as 10% to more than 90% (Shaamekhi et al., 2019; Ayalew, 2017). The reasons for high prevalence were mentioned as easy availability of both over-the-counter (OTC) and prescription medicine without prescription and minor condition of the disease.
Table 4: Reason for SM practice by the study participants among the community of Lalitpur Metropolitan City from September to December 2019.

| Reason for SM practice                                      | Yes (%) | No (%) | Do not know (%) |
|-------------------------------------------------------------|---------|--------|-----------------|
| Minor illness                                               | 419 (92.3) | 10 (2.2) | 25 (5.5)        |
| Previous experience with the same disease                    | 384 (84.6) | 25 (5.5)  | 45 (9.9)        |
| Access to Pharmacy                                          | 363 (80.0) | 90 (19.8) | 1 (0.2)         |
| Time-saving                                                 | 361 (79.5) | 84 (18.5) | 9 (2.0)         |
| Money-saving                                                | 286 (63.0) | 154 (33.9) | 14 (3.1)        |
| Unnecessary medicine prescribed by the doctor               | 156 (34.4) | 237 (52.2) | 61 (13.4)       |
| Doctors likely to prescribe the same type of medicine        | 157 (34.6) | 181 (39.9) | 116 (25.6)      |
| Unavailability of the doctor                                | 154 (33.9) | 230 (50.7) | 70 (15.4)       |
| Bad experience with the doctor                              | 83 (18.3)  | 347 (76.4) | 24 (5.3)        |
| Uncomfortable in shearing disease condition                 | 83 (18.3)  | 351 (77.3) | 20 (4.4)        |
| Hospital/Clinic quite far from where I leave                 | 82 (18.1)  | 370 (81.5) | 2 (0.4)         |

Other reasons could be poor knowledge about medicine, non-availability of medical facilities, and other determinants of health.

This study indicated that there is a statistically significant association between storing medicine at home and self-medication practice. Similar results were reported in Iran (Karimy et al., 2019) and China (Yu et al., 2013).

In this study, most of the medicines used for SM were obtained from the pharmacy stores. Similar findings were reported in other studies carried out in Nepal, India, Ethiopia and Nigeria (Parajuli et al., 2019; Divya et al., 2016; Okolo and Nwankwo, 2019). This could be due to weak enforcement of regulation regarding drug handling and dispensing (Suleman et al., 2009) and lack of time and affordability to pay the healthcare expenses.

Most of the participants in this study reported that the main source of information to practice SM was a previous experience similar to other studies in developing country like Ethiopia, Uganda and Nigeria (Divya et al., 2016; Ocan et al., 2014; Abdulraheem et al., 2016). The three most common health problems found in this study were fever, headache, cough/common cold. This outcome has been supported by other studies done for Nepal, Iran, Uganda and Nigeria (Karimy et al., 2019; Ocan et al., 2014; Abdulraheem et al., 2016).

Categories of medicine use for SM were antipyretic followed by antimicrobials, NSAIDs, anti-cold preparation, drugs used in acidity, antihistaminic and oral contraception. A similar drug used pattern was mentioned in other studies (Bhattarai et al., 2014; Paudel and Aryal, 2020; Parajuli et al., 2019). A significant proportion of study participants used antimicrobials for SM, which is in agreement with the earlier study (Karmacharya et al., 2018). One of the major problems related to antimicrobials use is that it may lead to antimicrobial-resistant (Awad et al., 2005; Girma et al., 2011).

Further categorization of medicines into prescription and non-prescription shows almost half of the medicine used for the SM in the study was a prescription medicine, which is one of the alarming problems in Nepal. Therefore, the use of prescription drugs for SM should be discouraged. This will be only possible when there will be strict regulation of dispensing medicines and conduction of health education program by all concerned institutions in order to promote the awareness of the community on appropriate medicine utilization in general and antimicrobials use particular (Shafie et al., 2018).

The majority of the study participants stated that they preferred self-medicine because of the minor nature of the illness followed by easy accessibility to pharmacy store, time-saving, previous experience with the same disease and less cost for self-medication than visiting health facilities. Similar findings were reported in other studies (Baral et al., 2019).

Previous studies have reported that socio-demographic characteristic such as age, education level, income and family background (belonging to health professionals) were the important factors on the likelihood of SM (Ansari et al., 2020; Azami-Aghdash et al., 2015).
Table 5: Individual knowledge of SM among the community of Lalitpur Metropolitan City from September to December 2019.

| Q. No. | Statement                                                                 | Total (N=1004) | Self-medication | p-value |
|--------|----------------------------------------------------------------------------|----------------|-----------------|---------|
|        |                                                                            | N (%)          | Yes N (%)       | No N (%)|         |
| K1     | Self-medication is medicating one-self without consulting a doctor for a minor illness. |                |                 |         |
|        | Correct                                                                   | 903 (89.9)     | 404 (89.0)      | 499 (90.7)| 0.361   |
|        | Incorrect                                                                  | 101 (10.1)     | 50 (11)         | 51 (9.3) |         |
| K2     | Non-prescription medicines are also called as over counter medicine (OTC) |                |                 |         |
|        | Correct                                                                    | 444 (44.2)     | 202 (44.5)      | 242 (44.0)| 0.876   |
|        | Incorrect                                                                   | 560 (55.8)     | 252 (55.5)      | 308 (56.0)|         |
| K3     | Only OTC medicines can be used for self-medication.                        |                |                 |         |
|        | Correct                                                                    | 383 (38.1)     | 174 (38.3)      | 209 (38.0)| 0.916   |
|        | Incorrect                                                                   | 621 (61.9)     | 280 (61.7)      | 341 (62.0)|         |
| K4     | Medicine preferred for self-medication does not have any harmful effect.  |                |                 |         |
|        | Correct                                                                    | 326 (32.5)     | 129 (28.4)      | 197 (35.8)| 0.013   |
|        | Incorrect                                                                   | 678 (67.5)     | 325 (71.6)      | 353 (64.2)|         |
| K5     | Knowledge of illness is necessary for self-medication.                     |                |                 |         |
|        | Correct                                                                    | 750 (74.7)     | 350 (77.1)      | 400 (72.7)| 0.113   |
|        | Incorrect                                                                   | 254 (25.3)     | 104 (22.9)      | 150 (27.3)|         |
| K6     | Storing condition of the medicines need not be considered for those medicines that used for self-medication. |                |                 |         |
|        | Correct                                                                    | 311 (31)       | 134 (29.5)      | 177 (32.2)| 0.363   |
|        | Incorrect                                                                   | 693 (69)       | 320 (70.5)      | 373 (67.8)|         |
| K7     | In pregnancy, one should avoid self-medicate.                             |                |                 |         |
|        | Correct                                                                    | 58 (5.8)       | 13 (2.9)        | 45 (8.2) | <0.001  |
|        | Incorrect                                                                   | 946 (94.2)     | 441 (97.1)      | 505 (91.8)|         |
| K8     | OTC Medicine do not interact with concurrent medicine I have been taking. |                |                 |         |
|        | Correct                                                                    | 178 (17.7)     | 80 (17.6)       | 98 (17.8)| 0.935   |
|        | Incorrect                                                                   | 826 (82.3)     | 374 (82.4)      | 452 (82.2)|         |
| K9     | Medicine used for self-medication does not have any effect on underlining condition/s. |                |                 |         |
|        | Correct                                                                    | 736 (73.3)     | 76 (16.7)       | 192 (34.9)| <0.001  |
|        | Incorrect                                                                   | 268 (26.7)     | 378 (83.3)      | 358 (65.1)|         |

Overall knowledge outcome

|                   | High Level of knowledge | Low Level of knowledge |
|-------------------|-------------------------|------------------------|
|                   | 289 (28.8)              | 110 (24.2)             |
|                   | 179 (32.5)              | 371 (67.5)             |

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Table 6: Multiple logistic regression analysis of knowledge and other associated factors with SM among the community of Lalitpur Metropolitan City from September to December 2019.

| Variables                      | No SM N=550 | SM N=454 | P-value | Odds Ratio          | Crude (CI) | Adjusted (CI) |
|--------------------------------|-------------|----------|---------|---------------------|------------|---------------|
| **Gender**                     |             |          |         |                     |            |               |
| Male                           | 275 (50)    | 216 (47.60) | 0.445   | 1                   |            | 1             |
| Female                         | 275 (50)    | 238 (52.40) | 1.10 (0.86-1.41) | 1.07 (0.78-1.48) |            |
| **Age in years**               |             |          |         |                     |            |               |
| 18-30                          | 166 (30.2)  | 79 (17.4) | <0.001  | 1                   |            | 1             |
| 31-40                          | 195 (35.5)  | 99 (21.8) | 1.07 (0.74-1.53) | 0.88 (0.56-1.39) |            |
| 41-50                          | 98 (17.8)   | 95 (20.9) | 2.04 (1.38-3.01)* | 1.74 (1.03-2.95)* |            |
| 50-60                          | 61 (11.1)   | 95 (20.9) | 3.27 (2.15-4.97)* | 4.17 (2.41-7.22)* |            |
| >60                            | 30 (5.5)    | 86 (18.9) | 6.02 (3.67-9.88)* | 5.22 (2.73-9.98)* |            |
| **Marital status**             |             |          |         |                     |            |               |
| Single                         | 204 (37.1)  | 136 (30.0) | 0.025   | 1                   |            | 1             |
| Married                        | 320 (58.2)  | 305 (67.2) | 1.4 (1.09-1.87)* | 1.08 (0.75-1.58) |            |
| Separated                      | 12 (2.2)    | 3 (0.7)   | 0.37 (0.10-1.35) | 0.37 (0.09-1.49) |            |
| Divorced                       | 7 (1.3)     | 4 (0.9)   | 0.86 (0.25-2.98) | 0.55 (0.13-2.35) |            |
| Widow/widower                  | 7 (1.3)     | 6 (1.3)   | 1.28 (0.42-3.91) | 0.89 (0.23-3.38) |            |
| **Education level**            |             |          |         |                     |            |               |
| University graduates           | 179 (32.5)  | 229 (50.4) | <0.001  | 1                   |            | 1             |
| High School level              | 198 (36.0)  | 92 (20.3) | 0.36 (0.26-0.50)* | 0.58 (0.28-1.21)* |            |
| School Level                   | 141 (25.6)  | 107 (23.6) | 0.59 (0.43-0.82)* | 1.17 (0.77-1.78) |            |
| Illiterate                     | 32 (5.8)    | 26 (5.7)  | 0.63 (0.36-1.10) | 0.60 (0.29-1.25) |            |
| **Current employment status**  |             |          |         |                     |            |               |
| Unemployed                     | 92 (16.7)   | 55 (12.1) | <0.001  | 1                   |            | 1             |
| Business                       | 182 (33.1)  | 109 (24.0) | 1.00 (0.66-1.51) | 0.84 (0.47-1.51) |            |
| Service                        | 218 (39.6)  | 240 (52.9) | 1.84 (1.26-2.70)* | 0.97 (0.50-1.62) |            |
| Others                         | 58 (10.8)   | 50 (11.0) | 1.44 (0.87-2.39) | 0.77 (0.38-1.55) |            |
| **The income per month (in Nepalese currency)** | 124 (22.5) | 65 (14.3) | <0.001  | 1                   |            | 1             |
| >50000                         | 204 (37.1)  | 137 (30.2) | 1.25 (0.86-1.80) | 0.98 (0.57-1.66) |            |
| <50000-35000                   | 140 (25.5)  | 117 (25.8) | 1.58 (1.08-2.32)* | 1.06 (0.61-1.83) |            |
| >20000-5000                    | 61 (11.1)   | 79 (17.4) | 2.23 (1.43-3.47)* | 1.36 (0.72-2.59) |            |
| <50000                         | 21 (3.8)    | 56 (12.3) | 4.03 (2.08-7.80)* | 1.45 (0.63-3.33) |            |
| **Family Background**          |             |          |         |                     |            |               |
| Non-healthcare Professionals   | 506 (92.0)  | 371 (82.2) | <0.001  | 1                   |            | 1             |
| Healthcare Professionals       | 44 (8.0)    | 81 (17.8) | 2.60 (1.74-3.90)* | 2.82 (1.68-4.75)* |            |
| **Storing Medicines at home**  |             |          |         |                     |            |               |
| No                             | 438 (79.6)  | 160 (35.2) | <0.001  | 1                   |            | 1             |
| Yes                            | 112 (20.4)  | 294 (64.8) | 7.19 (5.41-9.54)* | 7.01 (5.10-9.64)* |            |
| **Knowledge level**            |             |          |         |                     |            |               |
| High Level of Knowledge        | 179 (32.5)  | 110 (24.2) | 0.004   | 1                   |            | 1             |
| Low level of knowledge         | 371 (67.5)  | 344 (75.8) | 1.92 (1.32-2.81)* | 1.81 (1.14-2.88)* |            |
In the current study, older populations were more likely to practice SM may be due to a lack of awareness regarding SM practice and previous experience about similar conditions. Participants related to health professionals are more likely to practice SM may be due to their medicinal experience.

The study shows that a lower level of knowledge about medicine induces self-medication, similar to the findings in Sudan (Awad et al., 2005). More than half of the participants were unaware of the harmful effects of the medicine.

Most of the participants had no idea regarding storing condition of medicine, avoidance of medicine during pregnancy, and its interaction, which is similar to other studies (Azhar et al., 2013). This may be due to the absence of adequate knowledge regarding the potential harm of improper medicine use.

CONCLUSION

This study was done among the community of the Lalitpur Metropolitan City of Nepal. It showed a high prevalence rate for self-medication. Three of the most common ailments where SM was preferred include fever, headache and the common cold. The top reason for SM practice was the minor nature of the disease. The rate of SM showed an increasing trend with respect to the growing age of participants. The families belonging to health professionals have a high affinity towards SM and likewise, participants who store the medicine at home were more likely to practice SM. It showed that poor knowledge of medicine was an influencing factor for SM. As SM is unavoidable in many situations, medicine counselling, raising public awareness and regulation of medicine dispensing can be beneficial in reducing the prevalence of uninformed SM practices. The study would recommend the government or policymaker to implement strategies for stricter regulation of prescription-only medicine. It is highly desirable to design and implement action plans to improve the level of awareness about the consequences of SM and facilitate responsible use of SM in the country. Further, it recommends considering other factors that might affect SM practice like insurance, health behaviours like smoking, drinking etc. and quality of health services.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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