

## The Practice, Perception, and Awareness of Self-Medication for Dental Pain in Malaysian Dental Students

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### Abstract

Self-medication (SM) is using drugs on own free-will instead of being prescribed by healthcare providers. It is practiced among the population, but little is known among young adults in Malaysia. When dental students enter the first year at the university, their knowledge on medication was based on the exposure at home and school. When exposed to knowledge on diseases, medication and prescription during university days, they would have learnt on the management of dental pain. So, this study was done to determine the practice of SM for dental pain, and to compare the groups on the prevalence, factors, perception and awareness. Data of 123 responses on validated self-administered questionnaires was analysed using SPSS version 23 for descriptive statistics, t-test and one-way ANOVA.

The prevalence of SM practice was 37% for year1 and 61% for year5 who have better ability to diagnose and treat dental pain and thus seemed to be more at ease on SM. Sixty four year1 used salt, hot water, ice pack as medication while 50% of year5 took analgesic for the pain. Both groups perceived that SM is acceptable, seemed to have taken when available to save time and cost. Fear of dental treatment and instruments encouraged SM.

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### Introduction

Self-medication (SM) is the act or process of medicating oneself especially without the advice of a physician. It can also mean self-treatment<sup>1</sup>. Globally, SM is a major concern in a healthcare system as its practice has been widespread to cause detrimental consequences due to abuse, misuse and inappropriate use. A review paper on SM highlighted various factors that affect SM practices such as income, age, prior knowledge, education and occupation. The most common ailments for SM were cold, fever and body-ache. Analgesics and antibiotics were

prevalent drugs used and the source of information through personal experience and credible sources like chemists, friends and family. However this study stated that SM was not related with the educational level of patients but more for affordability and quick relief<sup>2</sup>.

A study by Anjan Giriraju in 2014 stated that SM prescription was found to be obvious and at an alarming rate of 70.9%. Dental pain due to caries seemed to be the most common reason. It could also come from the periodontal tissues or from non-dental origin such as sinusitis and tumours<sup>3</sup>. Pain experienced by the patients during orthodontic treatment started one hour after initial arch wire placement, peaked after one day, and became severe in 1 and 3 days. There was no mention on medication prescribed to the patients or if patient self-medicate for the pain<sup>4</sup>. Pain killers can temporarily relieve dental pain; however, the underlying cause of dental pain still needs to be treated. Antibiotics may be taken as an adjunct to treatment especially one related to bacterial infection as a cause of dental pain. In this study, most of the respondents consulted

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pharmacists for basic treatment and only decided to see a dentist if the problem persisted.

For endodontic emergencies, systemic analgesics and antibiotic appeared to be clinically effective as an adjunct but removal of the cause for pain and local application of Triple Antibiotic Paste as medicaments within the root canal system may be a more effective mode for drug delivery<sup>5</sup> but, as pain of endodontic origin can be severe, patient may resort to self-medicate.

Temporomandibular disorders (TMD) are the most common type of chronic orofacial pain that lowers the quality of life. Even though only 5% of the respondents (n=10) recorded the severity of chronic pain at the scale of 3 & 4<sup>6</sup> there was no report on medication prescribed to the patients in this study. It would be interesting to note how many of those 202 respondents would have self-medicated for their pain.

Over the counter (OTC) is another form of SM. This paper presented a conceptual model for OTC medication to promote medication safety<sup>7</sup>. OTC medication is medicating oneself with drugs that are bought OTC or bought in a shop without first visiting a doctor. Study on the purchase of OTC drugs for anticholinergic medications in 2019 stated potentially significant adverse effects. Participants reported effectiveness, and price as most important for their medication purchase.

Analgesics were the most frequently used medications by health sciences students in a study by Mohammed et al. 2019, particularly to treat headaches, colds, cramps, and fever but dental pain was not included as one of the indications of use. Eighty three percent of respondents reported that they used analgesics in the past year and 78% were satisfied with it. Most respondents (92%) were aware that analgesics have side effects and they have adequate knowledge about the safety of analgesics consumption<sup>8</sup>. This study recommended that it was necessary to educate the students about the side effects and drawbacks of irresponsible SM.

In the case of an antibiotic, a systematic review paper stated that there was a high prevalence of SM usage ranging from 8.1% to 93%, for health conditions such as sore throat, common cold, headache, flu, fever, runny nose, upper respiratory tract infections, and urinary tract infection<sup>9</sup>. The percentage of usage was associated with the level of education,

accessibility, affordability and conditions of health facilities.

A study in 2013 on dental students reported as high as 94% of them practiced SM. However, it was more for fever (78%), common cold and cough (47%) and pain which included headache and stomach-ache<sup>10</sup>. There was no specific mention on dental pain. Thus, our study was carried out to explore and determine the prevalence, knowledge, practice, perceptions and awareness of year1 and year5 of dental students on SM for dental pain.

### Materials and methods

This validated cross-sectional study evaluated two groups of dental students of year1 who have not gone through the teaching of medication and prescription and comparing them to year5 who were in the last semester of their dental undergraduate study. The study population was 123 on year1 (n=78) and year5 (n=45). Unwilling participant was excluded from the study. The questionnaires were adopted from the research instrument developed by previous researchers<sup>11</sup> and validated by a panel of experts including dental, medical doctors and pharmacists. It consisted of four sections on demographic information, SM practice (8 questions), factors for SM (14 questions), perception and awareness (9-11 questions). Data was collected with informed consent and briefed on study purpose and impact. Data was analysed using SPSS Version 23 (USA) for descriptive statistics, one-way ANOVA with t-test for statistical significance (P values<0.05).

### Results

|           | Year 1 |     | Year 5 |     | (P<0.05)     |
|-----------|--------|-----|--------|-----|--------------|
|           | (%)    | (n) | (%)    | (n) |              |
| SM        | 37     | 29  | 61.2   | 27  |              |
| Do not SM | 63     | 49  | 38.7   | 18  | 0.04         |
|           |        |     |        |     | Significance |

**Table 1.** Prevalence of SM for dental pain.

A total of 123 students responded to the questionnaires. The prevalence of SM for dental pain was 37% (n=29) for year1 and 61% (n=27)

for year5, a significant increase with P values<0.05 (Table 1, Figure 1).

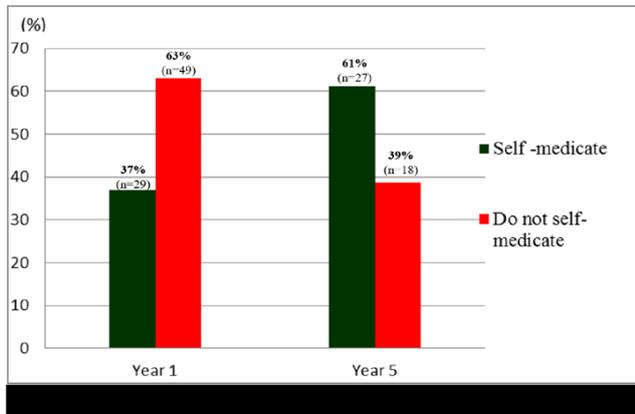


Figure 1. Prevalence of SM for dental pain.

Both the years experienced on dental pain were equal at 69% (Table 2, Figure 2) and the origin of pain were 46%, 37% and 16.7% from tooth, gum and both for year1 with 32%, 45% and 23%, for year5 respectively (Table 3, Figure 3).

|     | Year 1 |     | Year 5 |     |
|-----|--------|-----|--------|-----|
|     | (%)    | (n) | (%)    | (n) |
| Yes | 69.2   | 54  | 68.9   | 31  |
| No  | 30.8   | 24  | 31.1   | 14  |

Table 2. Experienced of dental pain.

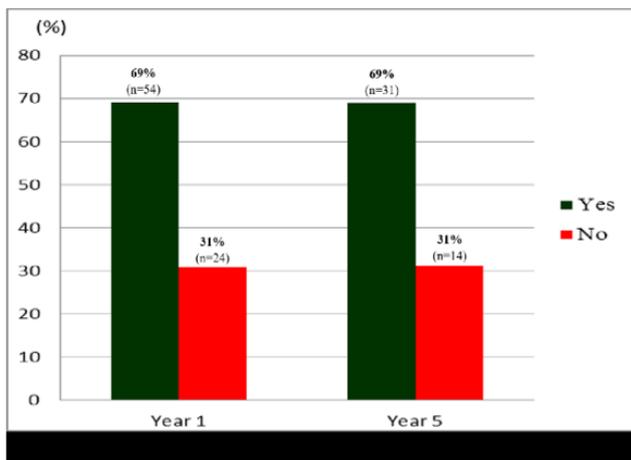


Figure 2. Experienced of dental pain

Year1 used salt, hot water, ice pack and others (64%) for SM while year5 took analgesic

instead. (Table 4, Figure 4). Both years agreed that they did not visit a doctor for minor pain, they feared dental treatment and dental instruments, that they wanted to save time and cost and they could SM through information from internet. The percentages of agreement were quite high at 30%-69%.

|       | Year 1 |     | Year 5 |     |
|-------|--------|-----|--------|-----|
|       | (%)    | (n) | (%)    | (n) |
| Tooth | 46.3   | 25  | 32.3   | 10  |
| Gum   | 37.0   | 20  | 45.2   | 14  |
| Both  | 16.7   | 9   | 22.6   | 7   |

Table 3. Origin of pain.

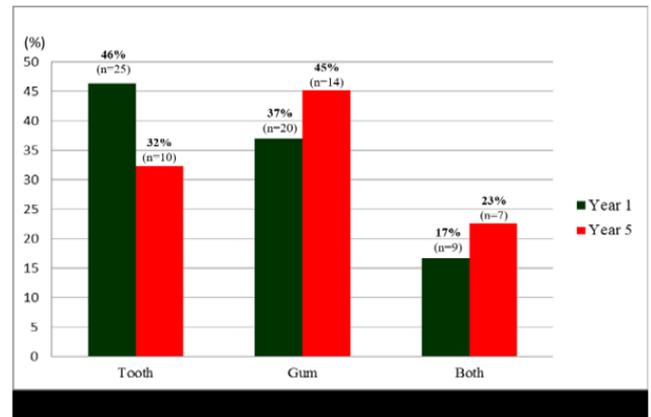


Figure 3. Origin of pain.

|                                         | Year 1 |     | Year 5 |     |
|-----------------------------------------|--------|-----|--------|-----|
|                                         | (%)    | (n) | (%)    | (n) |
| Analgesic                               | 24     | 6   | 50     | 14  |
| Antibiotic                              | 12     | 3   | 3.6    | 1   |
| Herbal                                  | 0      | 0   | 10.7   | 3   |
| Others (Salt, hot water, ice pack, etc) | 64     | 16  | 35.7   | 10  |

Table 4. Types of medication.

Fortunately, when asked on the acceptability of dental students to SM, only 21.8% of year 1 and 33% of year5 agreeable. Sadly though, only 10.3% of year1 and with slight increase of year5 at 26.7% seemed has the ability to diagnose and treat the symptoms of dental pain.

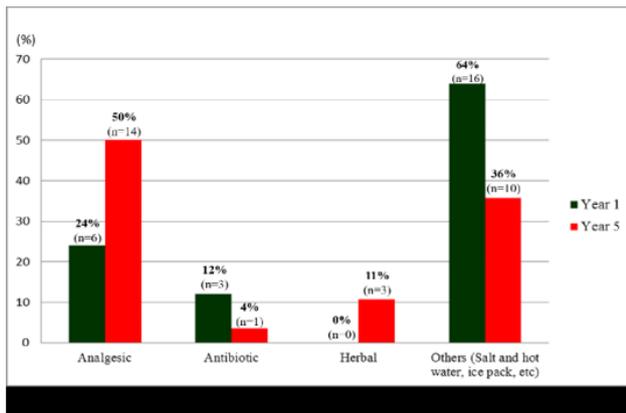


Figure 4. Types of medication.

|                                                         | Year 1 (%) | Year 1 (n) | Year 5 (%) | Year 5 (n) |
|---------------------------------------------------------|------------|------------|------------|------------|
| <b>No need to visit doctor for minor pain</b>           |            |            |            |            |
| Disagree                                                | 11.5       | 9          | 24.4       | 11         |
| Neutral                                                 | 43.6       | 34         | 42.2       | 19         |
| Agree*                                                  | *44.9      | 35         | *33.3      | 15         |
| <b>Fear of dental treatment</b>                         |            |            |            |            |
| Disagree                                                | 21.8       | 17         | 20         | 9          |
| Neutral                                                 | 15.4       | 12         | 24.4       | 11         |
| Agree*                                                  | *62.8      | 49         | *55.6      | 25         |
| <b>Fear of dental instruments</b>                       |            |            |            |            |
| Disagree                                                | 20.5       | 16         | 24.5       | 11         |
| Neutral                                                 | 24.4       | 19         | 26.7       | 12         |
| Agree*                                                  | *55.1      | 43         | *48.9      | 22         |
| <b>Time saving</b>                                      |            |            |            |            |
| Disagree                                                | 19.2       | 15         | 8.9        | 4          |
| Neutral                                                 | 14.1       | 11         | 22.2       | 10         |
| Agree*                                                  | *66.7      | 52         | *68.9      | 31         |
| <b>Cost saving</b>                                      |            |            |            |            |
| Disagree                                                | 15.4       | 12         | 8.9        | 4          |
| Neutral                                                 | 15.4       | 12         | 24.4       | 11         |
| Agree*                                                  | *69.2      | 54         | *66.7      | 30         |
| <b>Information about the medicine from social media</b> |            |            |            |            |
| Disagree                                                | 15.4       | 12         | 22.2       | 10         |
| Neutral                                                 | 21.8       | 17         | 31.1       | 14         |
| Agree*                                                  | *62.8      | 49         | *46.7      | 21         |

Table 5. Factors Contributing to SM.

\* denotes the percentages of agreement at 30% to 69%.

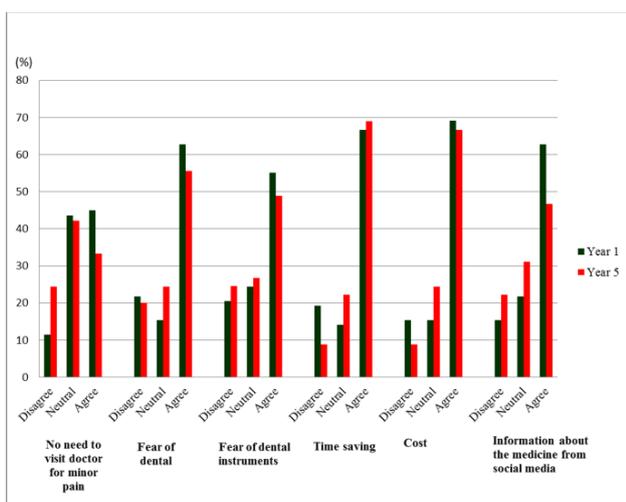


Figure 5. Factors contributing to SM for dental pain.

|                                                                                | Year 1 (%) | Year 1 (n) | Year 5 (%) | Year 5 (n) |
|--------------------------------------------------------------------------------|------------|------------|------------|------------|
| <b>Self-medication is acceptable</b>                                           |            |            |            |            |
| Disagree                                                                       | 37.2       | 29         | 20         | 9          |
| Neutral                                                                        | 41.0       | 32         | 46.7       | 21         |
| Agree                                                                          | 21.8       | 17         | 33.3       | 15         |
| <b>I have good ability to diagnose symptoms of dental pain</b>                 |            |            |            |            |
| Disagree                                                                       | 50         | 39         | 24.5       | 11         |
| Neutral                                                                        | 39.7       | 31         | 48.9       | 22         |
| Agree                                                                          | 10.26      | 8          | 26.7       | 12         |
| <b>I have good ability to treat the symptoms of dental pain</b>                |            |            |            |            |
| Disagree                                                                       | 51.3       | 40         | 22.2       | 10         |
| Neutral                                                                        | 34.6       | 27         | 51.1       | 23         |
| Agree                                                                          | 14.1       | 11         | 26.7       | 12         |
| <b>It is essential to get medication from a legal practitioner</b>             |            |            |            |            |
| Disagree                                                                       | 5.1        | 4          | 2.2        | 1          |
| Neutral                                                                        | 5.1        | 4          | 4.4        | 2          |
| Agree*                                                                         | *89.8      | 70         | *93.3      | 42         |
| <b>The course of antibiotic should be completed after the symptom subsided</b> |            |            |            |            |
| Disagree                                                                       | 1.3        | 1          | 2.2        | 1          |
| Neutral                                                                        | 21.8       | 11         | 2.2        | 1          |
| Agree*                                                                         | *76.9      | 60         | *95.6      | 43         |

Table 6. Perception of SM for dental pain.

\* denotes the percentages of agreement at 77% to 96%

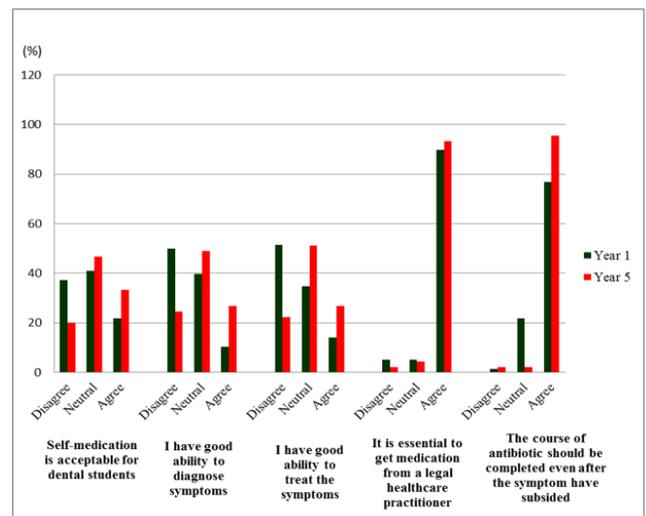


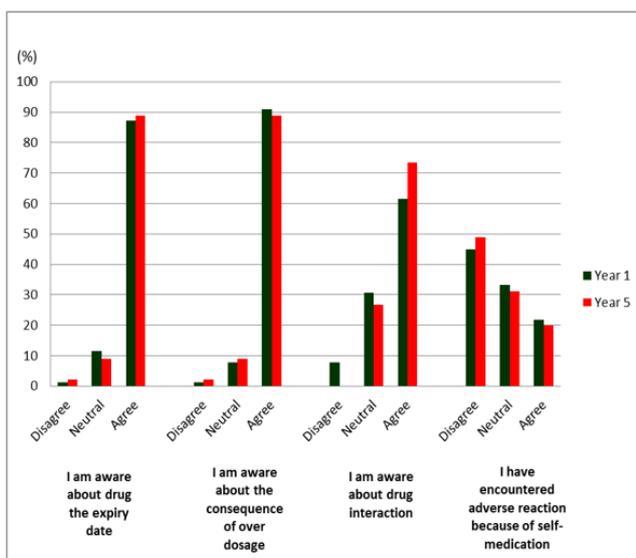
Figure 6. Perception of SM for dental pain.

A good 39.7 – 51.1% seemed unsure (neutral) (Table 5, Figure 5). Most students believed that it was essential to get medication from a legal healthcare practitioner and that the course of antibiotics should be completed even after the symptoms have subsided (Table 6, Figure 6). The students were aware about the expiry dates, the consequence of over dosage, drug interactions with high agreement ranging 62% - 91% both for year1 and year5 (Table 7, Figure 7).

|                                                        | Year 1 |     | Year 5 |     |
|--------------------------------------------------------|--------|-----|--------|-----|
|                                                        | (%)    | (n) | (%)    | (n) |
| <b>I am aware about the expiry date</b>                |        |     |        |     |
| Disagree                                               | 1.3    | 1   | 2.2    | 1   |
| Neutral                                                |        | 9   | 8.9    | 4   |
| Agree*                                                 | 11.5   | 68  | *88.9  | 40  |
| <b>I am aware about the consequence of over dosage</b> |        |     |        |     |
| Disagree                                               | 1.3    | 1   | 2.2    | 1   |
| Neutral                                                | 7.7    | 6   | 8.9    | 4   |
| Agree*                                                 | *91    | 71  | *88.9  | 40  |
| <b>I am aware about drug interactions</b>              |        |     |        |     |
| Disagree                                               | 7.7    | 6   | 0      | 0   |
| Neutral                                                | 30.7   | 24  | 26.7   | 12  |
| Agree*                                                 | *61.5  | 48  | *73.33 | 33  |
| <b>I have encountered adverse reaction</b>             |        |     |        |     |
| Disagree                                               | 44.9   | 35  | 48.9   | 22  |
| Neutral                                                | 33.3   | 26  | 31.1   | 14  |
| Agree                                                  | 21.8   | 17  | 20     | 9   |

**Table 7.** Awareness of SM for dental pain.

\*denotes the percentages of agreement at 62% to 91%.



**Figure 7.** Awareness of SM for dental pain.

## Discussion

Teeth had different pain thresholds and sensitivity. The pain threshold in female was lower (31%), while the sensitivity was higher (20%) than in male<sup>12</sup>. In a study on 282 consenting respondents, almost 73.8% who admitted to self-medicated, female predominate at 62% and reasons for SM was unbearable pain (38.5%)<sup>13</sup>. Due to inequality of male and female students in the faculty, our study could not analysed the prevalence for of SM for male and female.

The most common chief complaint recorded among the dental patients was dental pain and followed by swelling, mobility and tooth replacement. We recorded the pain was from the tooth, gum and both. In a study by Dhaimade & Banga<sup>14</sup>, 81% practiced SM for dental problems with 56 % used analgesics to get quick or temporary relief and they did not go to health care provider unless the symptoms got severe. Significant relationship was recorded between the level of awareness of patients about the ill effect of SM and the prevalence of its practice among dental patients. In our study, 37- 61% of these young adults practiced SM with analgesics (50%), salts, hot water or ice pack (64%). A study by Paulino et al, was also in agreeable to the prevalence of self-medication in their population (69.8%), the most commonly used drug was paracetamol (60.7%)<sup>15</sup>, while a minority (7%) used dangerous substances such as petrol and vinegar. The occurrence of SM practice is distressingly high among health science students in some reported countries. It is really necessary to educate them about the side effects and drawbacks of irresponsible SM<sup>16</sup>.

Common types of SM among dental students in our institution were analgesics followed by antibiotics, herbs and others. The treatment was likely practiced due to inexpensive alternatives and pharmacist advice. The major prevalence of analgesics used was consistent with other SM studies<sup>17</sup>.

For SM on antibiotics, our study reported 12% of first year consumed antibiotics compared to only 3.6% of final year students. This difference is encouraging as they would have better sensitization towards proper antibiotic usage throughout the five years study. In another study involving nursing students, it was found that access to drugs and handling them in the future practice made them susceptible to SM. They started using antibiotics on their own (31.1%) and the reason among others was for toothache or swelling. SM was influenced by being satisfied from previous antibiotics use, unfortunately majority of these students did not understand antibiotic resistant (ABR)<sup>18, 19</sup>. The students in our study seemed to understand a lot better on ABR with 77% of first year and 96% of final year agreed that the course of antibiotics should be completed even after the symptoms have subsided. In addition, lenient behaviour of pharmacists and lack of health insurance could

be factors for easy consumption of drugs.

Regulation of self-prescribed antibiotics as a routine self-management of dental problems should be proposed here in Malaysia as in Saudi Arabia, Bangladesh and other countries<sup>20</sup>. Exposure to knowledge about SM in the early stages of undergraduate education is imperative to ensure an appropriate way to SM among students. Our students perceived that it was acceptable to SM but only with of the year1 agreeing at 21.8% and year5 at 33%. When asked on the ability to diagnose and treat the symptoms of dental pain only 10.3% of year1 and with slight increase of year5 at 26.7% agreeable. A good 39.7 – 51.1% seemed unsure (neutral). Fortunately, high percentage of students believed that it was essential to get medication from a legal healthcare practitioner and that the course of antibiotics should be completed even after the symptoms have subsided.

As future dentists, they need to be aware that poor adherence to SM may make it less useful and even harmful practice<sup>21</sup>. More studies are required to estimate the prevalence of SM among health sciences students in other countries and to explore the various factors affecting SM such as awareness and knowledge about the advantages and disadvantages of SM. It is imperative to develop policies and legislations to purchase drugs from community pharmacies or OTC without prescription apart from those medications which are safe to use in the general population.

This study focused only on dental students in our institution. Efforts are being made to expand and include those from other disciplines, other institutions and the community for in depth information on SM in young adults in Malaysia.

## Conclusions

Portraying good health is deeply embedded in the medical culture to keep healthy. Dental students practiced SM, facilitated by the knowledge and easy availability of the drugs. Its prevalence was more among senior compared to junior students reflecting the increased confidence in their own medical skills and in making independent decisions. Time and cost saving was one of the main factors contributing to the practice and the information in the digital era that the students can get from the internet. However, the practice was inappropriate and

there is a need to sensitize undergraduate students about the potential serious effects of SM. Dental students once graduated are the future prescribers of drugs. Their practice, perception and awareness are of paramount important in order to ensure rational and safe use of drugs.

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## Declaration of Interest

The Authors report of no conflict of interest.

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