

Knowledge, Attitude, and Practice of Undergraduate Nursing Students Regarding Self-Medication

Syahirah binti Mohd Misli¹, Aini Ahmad², Puziah Yusof³, Azimah Momd Masri⁴, Teh Halimaton⁵
Annamma Kunjukunju⁶

¹Undergraduate student, School of Nursing, KPJ Healthcare, University College, Malaysia

²Senior Lecturer, School of Nursing, KPJ Healthcare, University College, Malaysia

³Dean, School of Nursing, KPJ Healthcare, University College, Malaysia

⁴Lecturer, School of Nursing, KPJ Healthcare, University College, Malaysia

⁵Lecturer, School of Nursing, KPJ Healthcare, University College, Malaysia

⁶Senior Lecturer, School of Nursing, KPJ Healthcare, University College, Malaysia

Received Date: 03 May 2021

Revised Date: 05 June 2021

Accepted Date: 09 June 2021

Abstract - Self-medication is widely practiced in both developed and developing countries. Self-medication is medication use without prior medical consultation regarding indication, dosage, and duration of treatment. The study's general objective was to identify the level of knowledge, attitude, and self-medication practices among undergraduate nursing students at one private healthcare university in Negeri Sembilan, Malaysia. The study used a cross-sectional descriptive design to meet the objective of this study. Overall, 214 nursing students were involved in this study. The data was collected using a validated questionnaire. The majority of the (70.1 %) nursing students reported self-medication in the last year. The finding also shows that 92.5% of students had good knowledge of self-medication. Overall 92.1%, also had a positive attitude to self-medication. As per the findings, 87 (40.7%) nursing students agreed that they would self-medicate first before consulting a doctor. Antipyretics were the most commonly used drugs. Inappropriate self-medication can cause harm to the students and also whom they suggest as a healthcare providers in the future. Therefore, there is a need to educate nursing students and make them more aware of the pros and cons of self-medication and the importance of informed self-medication.

Keywords - Self-care, Prevalence, nursing Students, Drugs, Self-medication.

I. INTRODUCTION

Self-medication is widely practiced in developed and developing countries [1]. In this modern era, the practice of self-medication has become the trend, especially among young adults. Self-medication can be attributed to socioeconomic factors, lifestyle, ready access to drugs, the increased potential to manage certain illnesses through self-

care, and greater availability of medicinal products, sociodemographic, epidemiological, accessibility, and availability of healthcare and health professional, law, society, and exposure to the advertisement; high level of education and professional status [2]. The availability of information on the treatment either from reliable sources or from other questionable resources such as health issues-related websites increases the practice of self-medication [3].

Besides, throughout this millennial era, the availability and accessibility of all the information through social media and advertisements has been broad. Furthermore, the technology has come out with various applications such as Your Health Companion, the Symptom Checker from WebMD, which increased self-medication practice. Every single piece of information on the signs, symptoms, treatment, and complication of a particular disease are easily accessible through this application. The availability of these applications leads to the practice of self-medication among nursing students. However, over-dependency on the application for treatment options does not make them risk-free from self-medication practice. The diagnosis from the application is not necessarily accurate; the healthcare sector had to bear the cost of self-medication almost every year to provide care and treatment for those admitted to the hospital due to adverse medical events. Cost-related effects of self-medication not only affect the healthcare sector but also affects the practitioner. This is because the cost of self-medication is poorly covered by insurance; therefore, the practitioner needs to bear the adverse effect of self-medication.

As a general concept, self-medication involves discontinuing or continuing using the medication prescribed by a physician for chronic or recurring disease or symptoms [5]. It is the



treatment of common health problems with medicines taken on an individual's initiative or the advice of a pharmacist without professional supervision [4]. It also involves acquiring medicines without a prescription, resubmitting old prescriptions to purchase medicines, sharing medicines with relatives or members of one's social circle, or using leftover medicines stored at home [6]. However, suppose the practice of self-medication is abused. In that case, it could delay accurate diagnosis and appropriate treatment. It could cause drug toxicity, side effects, drug interactions, and unnecessary expenditure [7][8].

Throughout the personal researcher observation, self-medication is being widely practiced among nursing students. Even though they think they have the knowledge and the accessibility of information sources at their fingertip, inappropriate self-medication may lead to a severe delay in seeking appropriate medical care. Furthermore, Kalyan et al. [9] mentioned that a high level of professional education is considered a predictive factor for self-medication. However, according to Bhatia, Ripudaman, Akashdeep, & BL [10], a high level of education will not guarantee that they are practicing safe self-medication. Nursing students perceive self-medication as harmless, and they keep practicing it, ignoring the countless dangers of self-medication. More often, self-medication is practiced to avoid consulting a doctor and also to minimize healthcare costs. However, the consequences can be severe enough to end up being hospitalized for misdiagnosis and wrong treatment [9].

Inaccurate dosage may also cause danger to the individuals. When individuals practice self-medication, they will risk accidental overdose as they may be estimating the dosage on their own. Conversely, when the inadequate dosage was consumed, it will not be effective, and the condition may worsen. Uppal, Agarwal, & Roy [8] state that self-medication may lead to the incorrect recognition of the disease, delay in meeting healthcare workers, the unknown side effect of medication, and drug resistance due to inappropriate antibiotic usage, dangerous drug interactions, and sometimes drug addictions.

However, it also causes loss of money due to unnecessary and irrational self-medication. Improving knowledge about self-medication, especially at an early age, may increase the population's knowledge concerning health, medicines, and self-medication [11].

The practice of self-medication is widespread among health professional students who are more exposed to the knowledge of different drugs during the training period than the general population [12][13]. Therefore, it was thought worthwhile to study the extent of self-medication among undergraduate nursing students.

Despite the availability of research on self-medication, not much of the research investigating self-medication among student nurses. As the student nurses might be the contributor to this phenomenon, to fill the knowledge gap, the researcher would like to investigate the prevalence, level of knowledge, attitude, and practice of self-medication among undergraduate student nurses in a private Healthcare University College Negeri Sembilan, Malaysia.

II. MATERIALS AND METHODS

A. Research design

This descriptive cross-sectional study was conducted among 214 undergraduate nursing students from one private healthcare University, Negeri Sembilan, in Malaysia. The University is part of a more extensive hospital network and offers Medical, nursing, and allied health programs.

B. Sampling procedure

Considering the good knowledge and attitude rates of 50, 95% confidence interval, and the maximum error rate of 7%, the sample size was estimated as 268 using the following sample size estimation for this cross-sectional study. The sample included in this study was 214 respondents with a response rate of 79.85% response rate. For the sample recruitment, non-probability convenience sampling was used for the recruitment of respondents in this study.

C. Data collection tool

The instrument used in this research was the questionnaire with closed-ended questions using a 5-point Likert-type scale. The questionnaire for this study was adapted and modified based on another study, "Knowledge, Attitude and Practice among Medical Students" [4]. The questionnaire of this study was organized into four parts. Part A: Sociodemographic information (5 items) and general questions (3 items). Part B: Questions related to knowledge of self-medication (13 items) Part C: Question-related to attitude towards self-medication (10 items) and Part D: Question-related to the practice of self-medication (6 items). To check the validity of the questionnaire, a pilot study and reliability testing had been done. The Cronbach's Alpha score was 0.827.

Data were analyzed by using IBM Statistical Package Social Science (SPSS) version 25. Quantitative and qualitative variables were described by mean \pm standard deviation and percentage, respectively. The Chi-square test was performed to assess any association of variables. P-value < 0.05 was considered statistically significant.

D. Ethical clearance

Ethical clearance was obtained from the Research Management Centre of the university affiliation. All the respondents were invited through email, which includes a link to access the research questionnaires. Data was collected using the Google Form as an online survey due to the outbreak of COVID-19.

III. RESULTS

A. Demographic information

As shown in Table 1 majority (70.1%) of the respondents were females (91.6%) aged between 17- 21years. Most of the respondents (n= 207, 96.7%) were diploma holders from year 2 training (46.7%). The majority of the respondents (n=186, 86.9%) were Malay.

Table 1: Demographic Characteristics

Variables	N	%
Age		
17-20	150	70.1
21-24	60	28.0
25-28	4	1.9
29-32	0	.0
33 and above	0	.0
Mean = 19.77		
Gender		
Female	196	91.6
Male	18	8.4
Education Level		
Diploma	207	96.7
Bachelor	7	3.3
Year of Study		
Year 1	82	38.3
Year 2	100	46.7
Year 3	32	15.0
Year 4	0	.0
Mean = 1.77		
Race		
Malay	186	86.9
Indian	13	6.1
Chinese	2	.9
Others	13	6.1

B. Prevalence of self-medication

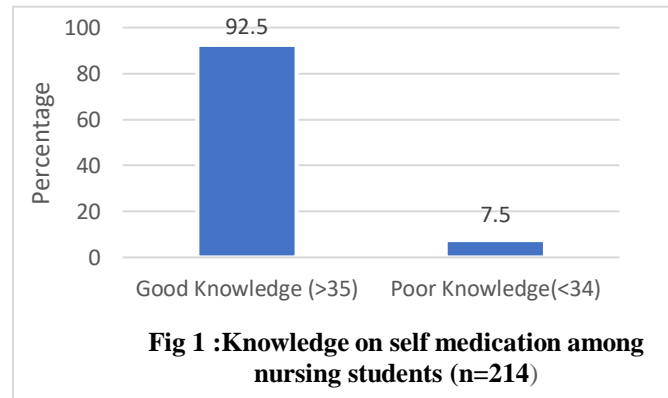
According to the results (Table 2), 70.1 % (n=150) reported self-medication last year, which shows a high prevalence of treatment choice. The study findings demonstrated that 146 (68.2%) get information for medications from the pharmacist and 32 (15.0%) respondents reported advertisements as their source of information about medications.

Table 2 Prevalence of self-medication

Items	Responses	n	%
Have you taken any self-medication in the last year	Yes	150	70.1
	No	64	29.9
How do you gain information regarding the medications?	Pharmacist	146	68.2
	Senior	13	6.1
	Textbook	23	10.7
	Advertisement	32	15.0

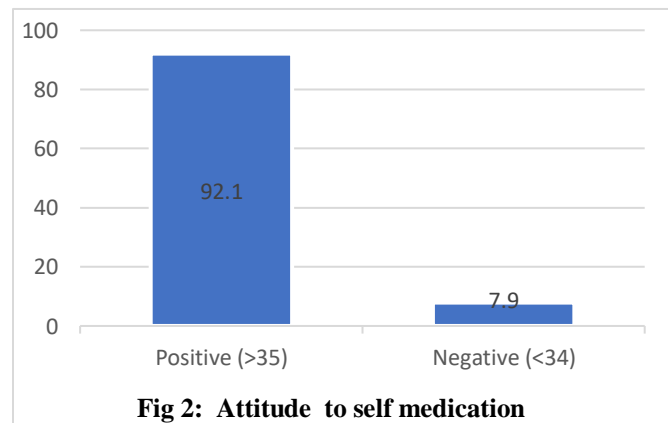
C. Nursing students knowledge towards self-medication

As shown in Figure 1, 198 (92.5%) respondents had a good level of self-medication, followed by 16 (7.5%) respondents who had insufficient knowledge regarding self-medication. The majority of the respondents (n=120, 56.1%) agree that self-medication is acceptable for nursing students.



D. Nursing students attitude towards self-medication

This study findings (Figure 2) also revealed that most of the respondents had a positive attitude on self-medication which was 197 out of 214 of the respondent (92.2%), and 17 out of 214 of the respondent (7.9%) had a negative attitude on self-medication.



E. Nursing students practice self-medication

Table 3 shows the practice of nursing students related to self-medication, and the findings are as follows. The most common response to illnesses among nursing students was self-medication (40.7%). The incentive used by the students in self-medication was the illness being mild and reliance on one self's academic knowledge. The respondents agreed that they would use self-medication for themselves mostly (52.3%). However, 42.3% also agreed that they advocate self-medication to the family members. Most respondents (n=87, 40.7%) choose to practice self-medication. Of the 214 respondents who practiced self-medication, 126 (58.9%) use it for fever, 40 (18.7%) used it for pain over the head, body, or tooth, and 28 (13.1%) used medication for cold and cough. Seventy-five (35.0%) respondents commonly used antipyretics for self-medication. Analgesic was commonly used by 64 (29.9%) of the respondents. Thirty-one (14.5%) respondents commonly took vitamins for self-medication. The primary justification for self-medication (29.9%) was because the illnesses are considered minor in nature. The majority of the respondents go against self-medication due to the risk of adverse drug reaction with 106 (49.5%). The respondents who go against self-medication (32.3%) are due to the wrong diagnosis risk.

Table 3 Practice related to self-medication

Items	Responses	n	%
When you fall sick, what is your immediate response?	Consult doctor	84	39.3%
	Ask suggestion	13	6.1%
	Self-medication	87	40.7%
	Wait till symptoms subside	30	14.0%
Self-Medication Usage Pattern	Practice self-medication for yourself	112	52.3%
	Practice self-medication for you and family members	86	40.2%
	Practice self-medication for someone else	2	0.9%
	Practice self-medication for family	14	6.5%
What is the common indication for self-medication?	Cold and cough	28	13.1%
	Pain (head, body, tooth)	40	18.7%
	Fever	126	58.9%

Which drugs or drug groups are commonly used for self-medication?	Diarrhoea	2	0.9%
	Dysmenorrhea	12	5.6%
	Nausea and vomiting	6	2.8%
	Analgesics		
		64	29.9%
	Antacids	4	1.9%
	Antipyretics	75	35.0%
	Antispasmodics	0	0.0%
	Antibiotics	28	13.1%
	Vitamins	31	14.5%
Reasons in favor of self-medication	Anti-allergies	6	2.8%
	Herbal	6	2.8%
	Minor illness	64	29.9%
	Prior experience	19	8.9%
	Emergency uses	59	27.6%
	Quick-relief	55	25.7%
	Lack of time to consult a doctor	12	5.6%
	Cost effectiveness	5	2.3%
	Risk of adverse drug reaction	106	49.5%
	Risk of the wrong diagnosis	69	32.2%
What is the reason to go against self-medication?	Risk of missing actual diagnosis	24	11.2%
	Risk of drug dependence	15	7.0%
	Dysmenorrhea	12	5.6%
	Nausea and vomiting	6	2.8%

F. Relationship between the Sociodemographic Data and the Knowledge Level of Self-Medication

This analysis (Table 4) revealed no association between the level of knowledge and age ($\chi^2=5.451$, p-value=0.066). Therefore, it can be concluded that the level of knowledge on self-medication did not influence by age. The association between level of knowledge and gender was not significant ($\chi^2= 6.177$, p-value=0.013). The finding of this analysis revealed there is an association significant between the level of knowledge and gender. Therefore, it can be concluded that the level of knowledge on self-medication did influence by gender. AS for the association between the level of education and the level of knowledge on self-medication, there is a significant relationship between education level and level of knowledge on self-medication ($\chi^2= 4.655$, p-value=0.031). Thus, this analysis proves that level of education did

influence the level of knowledge on self-medication. The association between the year of study and the level of knowledge on self-medication shows a significantly strong relationship between the year of study and the level of knowledge ($\chi^2=22.5$; p-value=0.000013). Therefore, it can be concluded that the year of study had influenced the level of knowledge on self-medication among undergraduate nursing students. This analysis shows no significant association between race and the level of knowledge on self-medication among undergraduate nursing students ($\chi^2=1.402$, a p-value is 0.705). Therefore, it can be concluded that the level of knowledge on self-medication was not affected by the respondent's race

Table 4 Association between Gender and Level of Knowledge on Self-Medication

Knowledge on Self-Medication					
Variable	Level of Knowledge				p-values
	Poor		Good		
	n	%	N	%	
Gender					
Female	12	5.6%	184	86.0%	χ^2 0.013
Male	4	1.9%	14	6.5%	
Level of Education					
Diploma	14	6.5%	193	90.2%	χ^2 0.031
Bachelor	2	0.9%	5	2.3%	
Year of Study					
Year 1	15	7.0%	67	31.3%	χ^2 0.00013
Year 2	1	0.5%	99	46.3%	
Year 3	0	0.0%	32	15.0%	
Year 4	0	0.0%	0	0.0%	
Race					
Malay	13	6.1%	173	80.8%	χ^2 0.705
Indian	1	0.5%	12	5.6%	
Chinese	0	0.0%	2	0.9%	
Others	2	0.9%	11	5.1%	

IV. DISCUSSION

The present study was performed to identify the prevalence of self-medication among undergraduate nursing students. The overall prevalence of self-medication reported in this study was (70.1%) which was reliable with the global variation of prevalence of self-medication which various studies have reported to range between 50-99%. This is comparable to the 84% among medical students of Chitwan Medical College Teaching Hospital (CMCTH) [4] and 76.8% of dental, nursing, and midwifery students studying at the University of Benin Teaching Hospital Nigeria [14]. The medical background of the respondents may be the reason. The fact that the respondents have easy access to healthcare information does not significantly reduce the practice of self-medication [14]. However, the prevalence of self-medication

in this study shows the importance of awareness programs for undergraduate nursing students.

In this study, researchers found that most respondents (92.5%) had good knowledge of self-medication. This finding is similar to a study done by Mehta & Sharma [4]. The majority of their respondents have a good knowledge of self-medication. Most of the respondents reported that they know the hazard of changing the timing of medication consumption. The respondents also had reasonably good knowledge of the hazard of increasing the drug dose without further consultation with the specialist.

The respondents had a positive attitude towards self-medication, saying that it was acceptable to practice self-medication. This finding is similar to a study done in Kathmandu Valley's college by Baral, Dahal, Shrestha, & Adhikari [15]. Another study by Mehta & Sharma [4] also supported this finding; it revealed that most respondents had a positive attitude towards self-medication and favored self-medication, saying it was acceptable. Self-medication is one of the components of self-care. Therefore, more awareness about responsible self-medication is needed to enhance students' attitudes towards self-medication practices [16].

The majority (40.7%) of the undergraduate nursing students in this study choose to practice self-medication as soon as they fall sick, followed by consulting a doctor (39.3%). Another study was done by Gupta, Khajuria, Bhat, Khajuria, & Mehra [17], who aimed to assess the knowledge, attitude, and practice of self-medication among undergraduate medical students reported that the respondents of their study practices self-medication (66%) followed by 34% who favored physician consultation. According to Gupta et al. [17], this finding is slightly overrated as students' newly acquired knowledge may contribute.

This study also aimed to determine the relationship between socio-demographics and the level of knowledge regarding self-medication among undergraduate nursing students. The association of demographic data and the knowledge level on self-medication were well discussed in numerous previous studies. Some of the demographic data might show an association significant with knowledge level, whereas others might not be significant. Among demographic factors studied in this research were age, gender, education level, year of study, and race. In this section, further elaboration would be given regarding the association between these two variables. The study revealed that the undergraduate nursing students within the age of 17-20 years had good knowledge of self-medication compare to another age group. However, from the analysis result, there is no significant association between these two variables.

The finding of this study also shows that female respondents had good knowledge of self-medication than male respondents. There was also a statistically significant

association between knowledge and gender, which concluded that the level of knowledge was influenced by gender among undergraduate nursing students.

A student's level of education might affect the level of knowledge on self-medication. In this study, the association between level of education and level of knowledge on self-medication had been analyzed. It is found that level of education had influenced the level of knowledge on self-medication. In this study, respondents studying diplomas had good knowledge of self-medication better than bachelor students.

From the analysis of the association between year of study and level of knowledge on self-medication, this present study revealed that students studying in Year 2 had good knowledge of self-medication. The finding also found an association between year of study and level of knowledge and year of study had influenced the level of knowledge on self-medication. Klemenc-Ketis, Hladnik supported the finding, "senior healthcare students practices self-medication more often than their junior colleagues is most probably due to increased medical knowledge" [18]. In short, for this study, the year of study influenced the level of knowledge on self-medication, where Year 2 students had a good level of knowledge on self-medication than the others. This study demonstrated that there was no relationship between race and level of self-medication among undergraduate nursing students.

A. Limitations and recommendations

Throughout this study, the researchers had encountered some limitations. Firstly, the data collection process was web-based. However, we could not track the number of 'hits' to determine how many students viewed the invitation. The number of students without internet access also could not be recognized. Besides, the web-based methodology causes unverified respondents. Secondly, the questionnaire was self-reported, which could have led to underreporting of self-medication practices. Thirdly, the number of male participants is less than females due to the less enrolment of male students in a nursing course. Therefore, the results could not be generalized to all students.

Organizing awareness campaigns in the media and teaching courses on the proper use of medicine and the consequences of self-medication could help in reducing the rate of self-medication among students [19]. In addition, a health professional should also actively participate through counseling and public health education about problems that may arise from inappropriate use of medications, health facilities should be available to each individual with much fewer difficulties, and strict rules regarding pharmaceutical advertising and supply of medications without pharmacies' prescriptions should be laid down [20].

V. CONCLUSION

This study aimed to determine the prevalence of self-medication, the level of knowledge, attitude, and the practice of self-medication among undergraduate nursing students. The researchers also want to identify the association between sociodemographic data and self-medication among undergraduate nursing students. This study showed that the majority of undergraduate nursing students practices self-medication. The high prevalence of self-medication in this study shows that awareness programs for nursing students are essential. Among all respondents, the majority of the students had good knowledge in regards to self-medication. The attitude on self-medication among all respondents also shows positive results. However, inappropriate self-medication can cause harm to the students and also whom they suggest as the healthcare provider in the future. Therefore, action must be taken to make them more aware of the pros and cons of self-medication and the importance of responsible self-medication. Although the self-medication practice is inevitable, the drug regulatory authorities and healthcare professionals had the most significant responsibility to control self-medication by providing the students with information about the total impact of drugs on the body. Moreover, the concepts and principles of self-medication might be helpful if they could be reflected in the formal curricula of health care discipline in Malaysia.

ACKNOWLEDGEMENTS

The researcher is grateful to all the nursing students who had to involve in this research project. The researcher feels very thankful that the author attaches to this research project on self-medication among undergraduate nursing students in a private university college.

REFERENCES

- [1] Flaiti, M. Al, Badi, K. Al, Hakami, W. O., & Khan, S. A., Evaluation of self-medication practices in acute diseases among university students in Oman. *Journal of Acute Disease*, 3(3) (2014) 249–252. [https://doi.org/10.1016/s2221-6189\(14\)60056-1](https://doi.org/10.1016/s2221-6189(14)60056-1)
- [2] Gutema, G. B., Gadisa, D. A., Kidanemariam, Z. A., Berhe, D. F., Berhe, A. H., Hadera, M. G., ... Dagne, A. W., Self-medication practices among health sciences students: The case of Mekelle university. *Journal of Applied Pharmaceutical Science*, 1(10) (2011) 183–189.
- [3] Chouhan, K., & Prasad, S. B., Self-medication and its consequences: A challenge to a health professional. *Asian Journal of Pharmaceutical and Clinical Research*, 9(2) (2016) 314–317.
- [4] Mehta, R. K., & Sharma, S., Knowledge, Attitude, and Practice of Self-Medication among Medical Students. 4(1) (2015) 89–96. <https://doi.org/10.9790/1959-04118996>
- [5] Dawood, O. T., Hassali, M. A., Saleem, F., Ibrahim, I. R., Abdulameer, A. H., & Jasim, H. H., Assessment of health-seeking behavior and self-medication among the general public in the state of Penang, Malaysia. *Pharmacy Practice*, 15(3) (2017) 1–7. <https://doi.org/10.18549/PharmPract.2017.03.991>
- [6] Kumar, N., Kanchan, T., Unnikrishnan, B., Rekha, T., Mithra, P., Kulkarni, V., ... Uppal, S., Perceptions and Practices of Self-Medication among Medical Students in Coastal South India. *PLoS ONE*, 8(8) (2013) 2–6. <https://doi.org/10.1371/journal.pone.0072247>
- [7] Sarahroodi, S., Arzi, A., Sawalha, A. F., & Ashtarinezhad, A., Antibiotics Self-Medication among Southern Iranian University Students, (2010) 48–52. *Iran: International Journal of Pharmacology*.

- [8] Uppal, D., Agarwal, M., & Roy, V., Assessment of knowledge, attitude, and practice of self-medication among college students. *International Journal of Basic & Clinical Pharmacology*, (2014) 988. <https://doi.org/10.5455/2319-2003.ijbcp20141204>
- [9] Kalyan, V., Padma, Tm., Pratap, K., Srinivas, Pc., Sudhakar, K., & Sudhakar, G., Evaluation of self-medication practices among undergraduate dental students of a tertiary care teaching dental hospital in South India, *Journal of Education and Ethics in Dentistry*, 3(1) (2013) 21. <https://doi.org/10.4103/0974-7761.126939>
- [10] Bhatia, M. K., Ripudaman, S., Akashdeep, S., & BL, B., Knowledge, Attitude, and Practice of self-medication among undergraduate medical students of Punjab. *The Journal of Medical Research*, 3(3) (2017) 151–154. <https://doi.org/10.31254/jmr.2017.3312>
- [11] Nair, A. S., Vidhya, K. M., Saranya, T. R., Sreelakshmy, K. R., & Nair, S. C., *International Research Journal of Pharmaceutical and Applied Sciences (IRJPAS)*, 3(5) (2013) 192–196.
- [12] Abay, S. M., & Amelo, W., Assessment of self-medication practices among medical, pharmacy, and health science students in Gondar University, Ethiopia. *Journal of Young Pharmacists*, 2(3) (2010) 306–310. <https://doi.org/10.4103/0975-1483.66798>
- [13] Kulkarni, P., Garg, A., Ajmera, A., Mahajan, A., Gadekar, S., & (India), P. K., Global Scenario of Self Medication: A Review of Literature, *Indian Journal of Commerce & Management Studies*, 9(1) (2018) 99. <https://doi.org/10.18843/ijcms/v9i1/14>
- [14] Azodo, C., Ehigiator, O., Ehigiator, L., Ehizele, A., Ezeja, E., & Madukwe, I., Self-medication practices among dental, midwifery, and nursing students. *European Journal of General Dentistry*, 2(1) (2019) 54. <https://doi.org/10.4103/2278-9626.106813>
- [15] Baral, K., Dahal, M., Shrestha, S., & Adhikari, A., Self-medication: Prevalence among Undergraduates in Kathmandu Valley. *Journal of Advances in Medical and Pharmaceutical Sciences*, (August), (2019) 1–13. <https://doi.org/10.9734/jamps/2019/v2i1i30122>
- [16] Gutema, G. B., Gadisa, D. A., Kidanemariam, Z. A., Berhe, D. F., Berhe, A. H., Hadera, M. G., Dagne, A. W., Self-medication practices among health sciences students: The case of Mekelle university. *Journal of Applied Pharmaceutical Science*, 1(10) (2011) 183–189.
- [17] Gupta, S., Khajuria, K., Bhat, N. K., Khajuria, V., & Mehra, A. Assessment of the knowledge, attitude, and practice of self-medication among second-year undergraduate medical students in a tertiary care teaching hospital. *International Journal of Basic & Clinical Pharmacology*, 8(5) (2019) 1090. <https://doi.org/10.18203/2319-2003.ijbcp20191606>
- [18] Klemenc-Ketis, Z., Hladnik, Z., & Kersnik, J., Self-medication among healthcare and non-healthcare students at the University of Ljubljana, Slovenia. *Medical Principles and Practice*, 19(5) (2010) 395–401. <https://doi.org/10.1159/000316380>
- [19] Zardosht, M., Dastootpoor, M., Bani Hashemi, F., Estebarsari, F., Jamshidi, E., Abbasi-Ghahramanloo, A., & Khazaeli, P., Prevalence and Causes of Self Medication among Medical Students of Kerman University of Medical Sciences, Kerman, Iran, *Global Journal of Health Science*, (2016). doi:10.5539/gets.v8n11p150
- [20] Helal, R. M., & Abou-Elwafa, H. S., Self-medication in university students from the city of Mansoura, Egypt, *Journal of Environmental and Public Health*, (2017). <https://doi.org/10.1155/2017/9145193>