Original Research Article

Knowledge, Attitude and Practice of self-medication among Pharmacy Students in North Cyprus

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Aim: The aim of our study is to assess the attitude, knowledge and practice of self-medication among fifth year Pharmacy Students at Near East University in Northern Cyprus.

Study design: A cross sectional study.

Place and Duration of Study: The study was conducted in faculty of pharmacy in Near East University in Northern Cyprus on 28 of December 2018.

Methodology: A 7- part self administered questionnare was used among fifth year pharmacy students who were available during the study time. Self-administered questionnaires was conducted using which comprise 7 parts among fifth year pharmacy students who were available during the study time.

Results: A total of 77 questionnaires were distributed to be filled by respondents, all of them were filled completely and collected.. 39(5188%)of the participants in our study were in the prevalent age group of 22-16 years and most of these students were from Turkey 42 (58.3%). 25.7% of students visited a physician when they had a disease, however 25% of them didn't comply with physician's prescription. Headache (16.8%) and common cold (14.0%) were the most frequently reported illness for which self-medication was taken. Analgesic medicines (37.4%), followed by vitamins (29.7%) and antibiotic (13.5%), were used commonly as self-medication. Nearly all of students 95.9% knew the meaning of OTC and prescription only drugs. About 30.7% of students medicated themselves because it isn't a serious disease. The main source of information about self-medication for students was the advice from pharmacist (29.7%). 26.8% of students agreed that pharmacists are good source of information for minor medical problems, 23.0% and 18.2% agreed that self-medication is acceptable for pharmacy students however 4.1% accepted that self-medication is not acceptable at all and it would be harmful.

Conclusion: The practice of self-medication is prevalent amongst fifth year pharmacy students even with adequate knowledge and awareness about the consequences. Proactive pharmacist may contribute in management of minor illness and rationalized self-medication.

Comment [NAT1]: In December 2018 or it was on a single day on december some date ?

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A 7- part self administered questionnare was used among fifth year pharmacy students who were available during the study time.

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1. INTRODUCTION

Self-medication is a global component of self-care practice and can be defined as "the selection and use of medicines/medicinal products, including herbal and traditional products on one's own initiative, or on the advice of another person, without consulting a physician either for diagnosis, prescription or surveillance of the treatment [1, 2].

The practice of self-medication is a growing trend [3] which generally involves over-the-counter (OTC) medications which are available without prescription in pharmacies but also includes prescription-only medicines (POM) [4], reutilizing/resubmitting a previous prescription, sharing medications with relatives or members of one's social circle, consuming leftover medicines already available at home, failure to comply with prescribed recommendations either prolonging it or interrupting it too early or decreasing or increasing the originally prescribed dose [5].

Self-medication has both benefits and risks. If done appropriately, self-medication can readily relieve acute medical problems, save scarce medical resources from being wasted on minor conditions, reduce the burden on medical services, decrease the time spent in waiting to see the physician, and save cost especially in economically deprived countries with limited healthcare resources [6,7]. On the contrary, inappropriate self-medication can lead to irrational drug usage, wastage of resources, increased chances of microbial resistance to antibiotics, increased risk of adverse reactions, drug interactions, drug addiction and prolonged morbidity [6, 8].

Self-medication patterns vary among different populations and are influenced by various features such as age, gender, income, self-care orientation, educational level, medical knowledge, previous experience, satisfaction, and seriousness of illnesses [9].

Self-medication is widely prevalent worldwide, especially in developing countries [10] like Northern Cyprus where not only OTC drugs, even most of the prescription only medicines (POM) are also easily accessible without prescriptions in community pharmacies. A published study in 2014 in Northern Cyprus reported that 87% of patients bought unprescribed medication at least once during their life and most commonly used medications are painkillers (32.9%) and antibiotics (29.3%) [11].

Studies have also shown that, self-medication is much more common among physicians, nurses, pharmacists and medical students as compared to general population [12]. There are many factors that influence their self-medication practice like easy availability of drugs, advertising of drug manufacturers, previous experiences with symptoms or disease, self-confidence about accurate drug knowledge, home-kept prescription drugs and easy access to information [13].

Pharmacy students are future pharmacists who have a potential role in counselling the patients about the advantages and disadvantages of self-medication. The academic curriculum of pharmacy students teaches them about rational use of medicines and consequences of irrational use but there was a lack of understanding of disease diagnosis [9]. Hence, it is important that the various patterns of self-medication be studied in them. This study aims to assess the knowledge, attitude, and practice (KAP) of self-medication among pharmacy students of Near East University in Northern Cyprus.

2. MATERIAL AND METHODS

2.1 Study Setting

A cross-sectional survey study conducted using self-administered questionnaires among pharmacy students (fifth year) in Near East University on December 2018. The study population consisted of all fifth-year pharmacy students that were available at the time of the study.

Comment [NAT8]: Why only 5th year students included?

Comment [sy9]: The study had some limitations and we faced some complications during it. First, we covered only fifth year pharmacy students due to shortage of time for the research work. So, if we had conducted the study among more years we would have got a more extensive scenario on the self-medication practice.

2.2 Data management system

2.2.1 Data collectors

The self-administered questionnaires were distributed and collected by the investigators from the students' class rooms, after providing an explanation regarding the study purpose and impact.

2.2.2 Data collection tool and Sampling

Questionnaires prepared in English ~~and translated to~~ ~~Turkish~~ which consists of 7 parts were distributed to collect all relevant data. The questionnaire was adopted from a formerly published study which was developed, standardized, and previously used by Kumar et al [14]. The questionnaires include; demographic information's which includes gender, age and nationality, the second part consists of disease or symptoms frequently self-treated by the students, procedures taken for the illness, source of information for self-medication and finally the students' attitude of towards self-medications. Descriptive statistics were used to describe the frequency of variables contained in the questioner.

Convenient sampling technique was used because we took all fifth-year pharmacy students [14].

2.2.3 Data analysis

Data were analyzed using SPSS and Microsoft Excel. Descriptive statistics were used to describe demographic information as well as variables contained in the questioner in order to assess practice, attitude, and knowledge of self-medication practice among pharmacy students.

2.2.4 Ethical issues

A verbal detailed explanation of the aim and objectives of the study was given to obtain the consent of students prior to data collection. They were also informed that participation is confidentiality and voluntary and would be maintained throughout the study.

3. RESULTS AND DISCUSSION

A total of 77 questionnaires were distributed to be filled by respondents, all of them were filled completely and collected.

The study was composed of 38 (49%) males and 39 (51%) female pharmacy students from fifth year. Most of the respondents were in the age 22-26 years (88%).

~~Also m~~Most of our sample were from Turkey 42 (58.3%), followed by North Cyprus~~and the second higher percentage were from KKTC~~ 14 (19.4%), and other nationalities like Iraqi 8 (11.1%), Syrians 4 (5.6%), Nigerian 2 (2.8%), Lebanese 1 (1.4%), and Egyptian 1 (1.4%) and others.

Regarding to procedures taken for the illness between the students, 25.7% of students are visiting a physician when they have a disease, while 20.9% are taking medicines from the pharmacy without prescription and 19.4% take medicine that remained from previous use. From 25.7% of students who usually visit a physician, about 25% of them don't comply with physician prescription. [Figure 1]

Comment [NAT10]: How was validity and reliabilty of the questionnaire tested.

Comment [sy11]: The questionnaire was adopted from a formerly published study which was developed, standardized, and previously used.

Comment [NAT12]: Was the consent verbal or written?

Comment [sy13]: Verbal

Comment [NAT14]: Please check with abstract and correct the discrepancy

Comment [sy15]: Thank you! I did correct it.
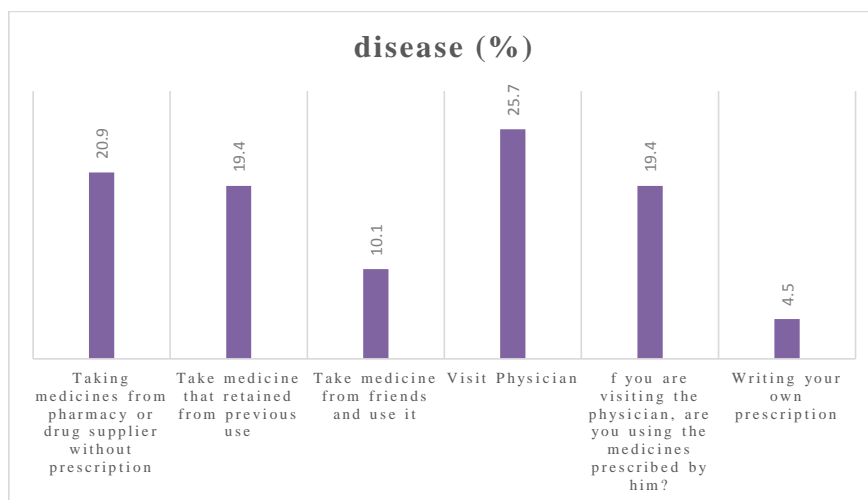
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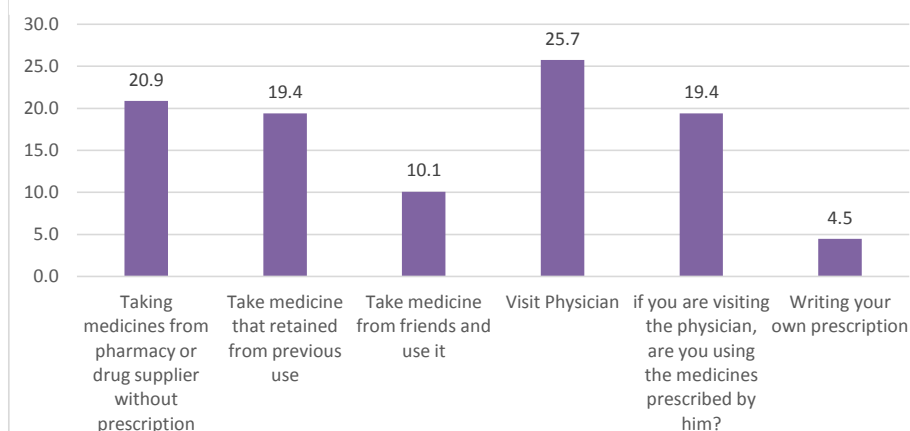
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disease (%)

20.9	19.4	10.1	25.7	19.4	4.5
Taking medicines from pharmacy or drug supplier without prescription	Take medicine that retained from previous use	Take medicine from friends and use it	Visit Physician	f you are visiting the physician, are you using the medicines prescribed by him?	Writing your own prescription

113

Figure 1: What are you usually doing when you have a disease

20.9	19.4	10.1	25.7	19.4	4.5
Taking medicines from pharmacy or drug supplier without prescription	Take medicine that retained from previous use	Take medicine from friends and use it	Visit Physician	if you are visiting the physician, are you using the medicines prescribed by him?	Writing your own prescription

114
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116
117
118 And for the diseases that the students— medicated themselves, the highest
119 percentage was for headache (16.8%) and common cold (14.0%) and 10.3%
120 constipation, 6.3% for vomiting, and a very small ratio for other diseases, which are:
121 skin disorder, chest pain, ear disease, eye disease, and chest pain. [Figure 2]
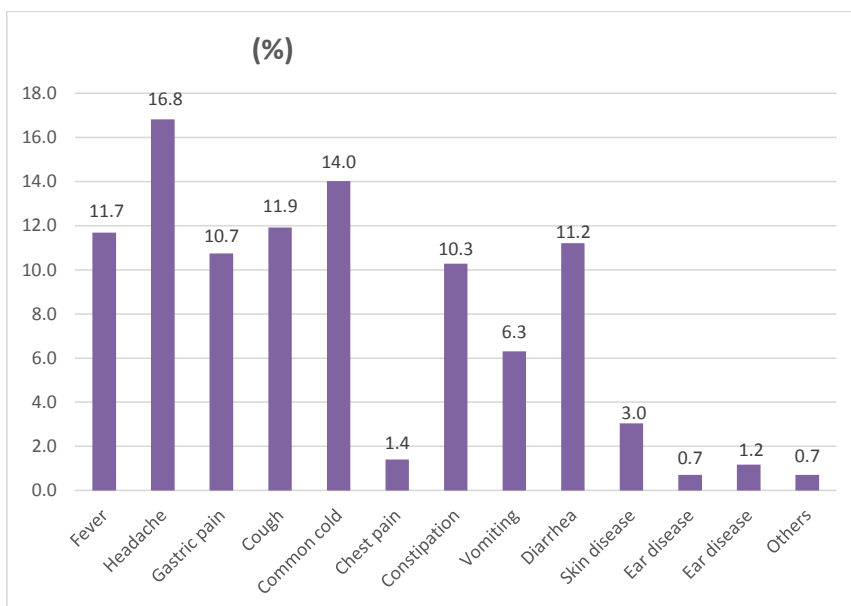122

Figure 2: In which of the following diseases do you medicate yourself

When we asked about the medicines which are used commonly as self-medication, we found that the highest percentage was for Analgesic medicines (37.4%), followed by Vitamins (29.7%), Antacid (16.5%), antibiotic (13.5%), and other medicines like aspirin and metformin where used in (3.3%) as self-medication among the students. [Figure 3]
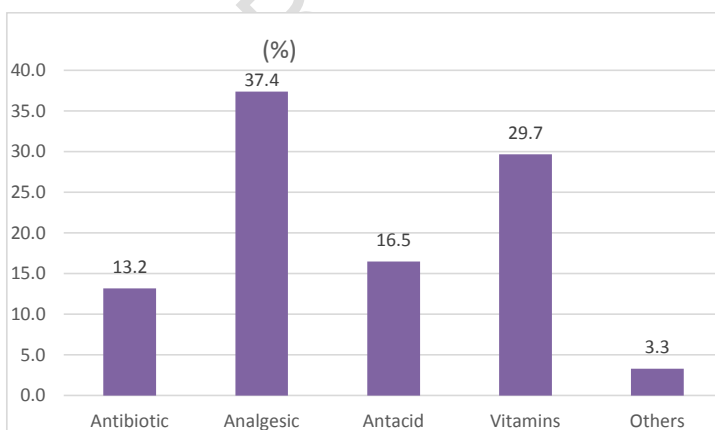

Figure 3: According to you, which of the following medicines do you usually use to medicate yourself?

137
138
139 And from our sample, 95.9% of our sample differentiate OTC and prescription only
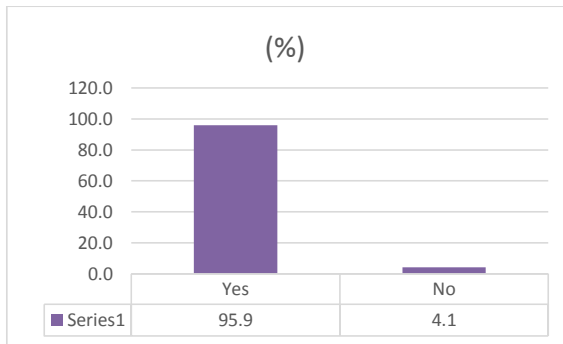140 drugs, while 4.1% didn't. [Figure 4]
141
142

(%)	Yes	No
■Series1	95.9	4.1

143
144
145 Figure 4: Knowing the medication classification "Over the Counter OTC and prescription only drugs"
146
147
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149
150 The reasons for self-medicated between the students was shown as, 30.7% of
151 students said that the disease is not serious, 24.3% of them had self-medicated
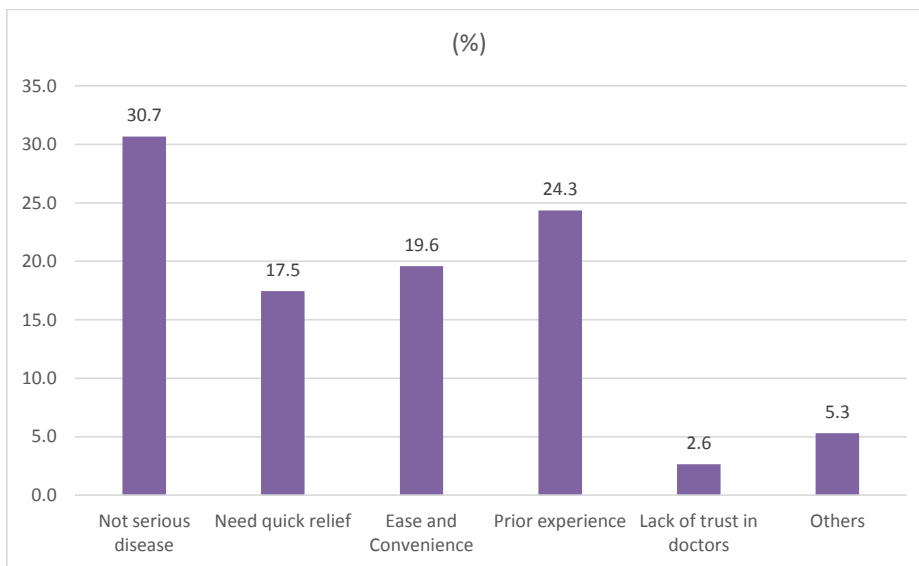152 because his prior experience while 19.6% answered "ease and convenience''.
153 [Figure 5]
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155
156
157 Figure 5: The reason(s) for medicating yourself
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160 For the students' sources of information about self-medication were 29.7% taking
161 the advice from pharmacist, while 23.6% were ask the physician but without taking
162 prescription and 21.8% depend on their own experience. [Figure 6]
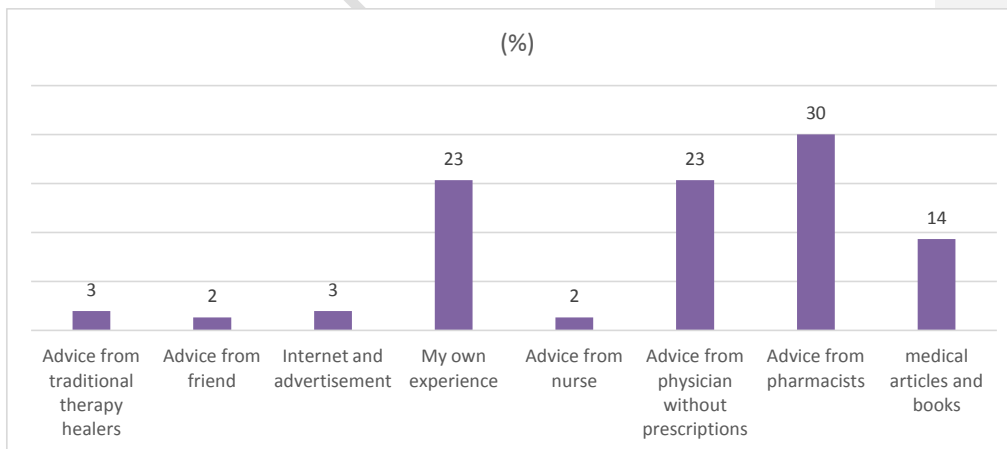163
164

165

Figure 6: The source(s) of information for medicating yourself

166

Data regarding attitude toward self-medication was 26.8% of students agreed that pharmacists are good source of information for minor medical problems, 23.0% were agree with completing the course of medicines although the symptoms improved and 18.2% were agree that self-medication is acceptable for pharmacy students. [Figure 7]
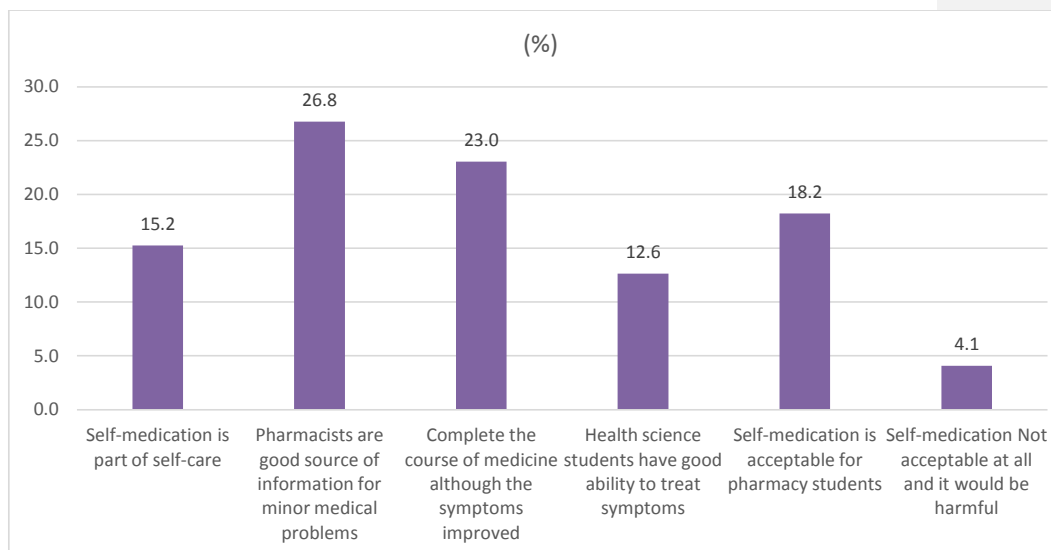

Figure 7: What do you think about self-medication practice?

DISCUSSION

The study was conducted among fifth year pharmacy students in Near East University in Northern Cyprus. Frequency of self-reported medication is highly variable in different parts; these results are may be due to the differences in study subjects, working definition of self-medication and tool used to collect the response of the participants [1615].

People have always been very cautious about their personal health status and for this they have used self-medication, a feature of healthcare, from ancient times. Although self-medication has many pros and cons it depends on who uses it and how it is used for self-treatment. We focused on pharmacy students because they have adequate knowledge of medicine in theory and are more cautious about the safety of drugs which is lacking in other student groups or in the general population. Thus a pharmacy student's view on the self-medication practice can be considered as a major factor to judge the characteristics of their future prescription pattern [13]. In Turkey and North Cyprus the duration of undergraduate pharmacy education has increased to five years, consisting of more clinical contents making a good opportunity for further implementation of the concept [1517].

The students of our study frequently use self-medication, and gender difference has not been shown to have any influence on the practice of self-medication. The

Comment [NAT22]: Please add a note why only 5th year students included

Comment [sy23]: The study had some limitations and we faced some complications during it. First, we covered only fifth year pharmacy students due to shortage of time for the research work. So, if we had conducted the study among more years we would have got a more extensive scenario on the self-medication practice. Thank you!

Comment [NAT24]: What is the basis of this comment was statistics applied to ensure it? If statistics was applied how sample size was calculated for this study?

Comment [sy25]: The Chi-square test was performed to measure the association between the gender and responses of using self-medication. The sample size was colculated with convenient sampling technique. Thank you.

195 reason behind insignificant gender differences in the overall exercise of self-
196 medication may be the study format that allowed the respondents to select drugs by
197 themselves.
198 In our study we found that about 68% of the students self-practice different types of
199 medication. A similar type of study was conducted by Kumar et al. in coastal south
200 India and signified that the amplitude of self-medication practice was 78.90% among
201 medical students [14]. Other similar studies also demonstrated the prevalence rate
202 of self-medication ranged between 57.1% and 92% among the medicals students in
203 India [18].

> **Comment [NAT26]:** Reference to be cited
> **Comment [sy27]:** Added, Thank you!

204 Several research works carried out in other developing countries revealed that the
205 prevalence of self-medication was 38.5% and 43.2% among medical, pharmacy,
206 and health science students in Ethiopia, 51% among citizens in Slovenia, 55.3%
207 and 55% among medical students in Pakistan and Egypt respectively, 56.9% among
208 medical undergraduate students in Nigeria, and 80.9% among female university
209 students in Malaysia. The major influential reason behind the higher propensity of
210 self-medication might be the unregulated easy availability of all categories of
211 medicine without prescription [13].

> **Comment [NAT28]:** Reference to be cited
> **Comment [sy29]:** Added, Thank you!

212 Similar to some previously published articles, headache, common cold, fever, and
213 vomiting were the most common symptoms for self-administration of medications
214 mentioned by the respondents[18][19][20].. The most common cause for self-
215 treatment with drugs in our study was non seriousness of disease which did not
216 require a doctor's visit. Similar outcomes were reported by the study conducted in
217 India [13][20]..

218 As mentioned, analgesics, vitamins, antacids, and antibiotics drugs were the most
219 common classes of drugs self-prescribed for treatment by almost all of the
220 respondents in our study. While in India antipyretics, analgesics, antacids, and
221 antidiarrheal drugs were the most common classes of drugs self-prescribed for
222 treatment by almost all of the respondents [13]. Antipyretics, analgesics, antacids,
223 and anti-diarrheal drugs were the most common classes of drugs self-prescribed for
224 treatment by almost all of the respondents in our study[17][18][19].These classes of
225 drugs were frequently used by medical students as found in the studies conducted
226 in India[x1], Pakistan [6], Iran [21], and Ethiopia[19].
227
228 Almost identical observations were found in the studies conducted in India,
229 Pakistan, Iran, and Ethiopia where these common classes of drugs were frequently
230 used by medical students.

> **Comment [NAT30]:** Reference needed
> **Comment [NAT31]:**
> **Comment [sy32]:** Added, Thank you!
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> **Comment [sy34]:** References has been fixed, thank you!
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231 Furthermore, the use of antibiotics was different to that of analgesics and
232 antipyretics.
233 This tendency is because of the knowledge of pharmacy graduates on the
234 resistance and side effects of antibiotics. It is well known that proper medicinal
235 knowledge can promote a good prescribing pattern of pharmacists. However, at the
236 same time inappropriate or irrational use of these drugs can lead to various
237 hazardous effects including the reduction in the capability of microbial flora to resist
238 detrimental microorganisms, the development of multidrug resistance, addiction,
239 toxicity, and other related syndromes. Therefore, such kind of practice should be
240 discouraged [13].
241 We found from our study that the key factor for self-medication practice by the
242 participants was their adequate pharmacological knowledge which they had

243 ~~gathered from their academic courses, and they trust themselves as pharmacists.~~
244 ~~These findings are similar to those from studies conducted in Nepal, India, Malaysia,~~
245 ~~Ethiopia, and Pakistan.~~ In our study we found that the major source of information
246 on self-prescribed drugs was from advice from pharmacists and this result is the
247 same with the findings of the study conducted in Saudi Arabia [23]. ~~The second~~
248 ~~major source of information on self-prescribed drugs was from previous~~
249 ~~prescriptions for the same illness and this result was analogous to the findings of the~~
250 ~~study conducted in India.~~ Further, other researches conveyed in India and Ethiopia
251 reported the internet as another common source of knowledge on self-prescribed
252 medicines which was the ~~third~~ fifth common source of information in our study
253 results [13].
254 About 15.2% of the students believed that self-medication is a part of self-
255 medication this is less than studies conducted in India [21], Ethiopia [18], and
256 Pakistan [22]. Self-medication can only be considered a part of self-care if legitimate
257 use of medicaments can be ensured. It may lead to drug toxicity as their sharing
258 with friends or taking medicines that have been actually prescribed for other
259 problems, also there is a risk of using expired drugs [13].
260 ~~About 15.2% of the students believed that self-medication is a part of self-~~
261 ~~medication this is less than studies conducted in India, Ethiopia, and Pakistan. Self-~~
262 ~~medication can only be considered a part of self-care if legitimate use of~~
263 ~~medicaments can be ensured. It may lead to accidental drug toxicity as there is~~
264 ~~always a risk of using expired drugs and also sharing with friends or taking~~
265 ~~medicines that have been actually prescribed for other problems. [13][18]~~
266 ~~And 26.8~~23% of these students considered the pharmacists as a good source for
267 self-medication; it is similar to some studies that were done in Ethiopia, which
268 considered pharmacists a very trustful source for self-medication.
269 23% of our sample was agreed with completing the course of medicines although
270 the symptoms of the illness were improved, 18.2% were agree that self-medication
271 is acceptable for pharmacy students, 15.2% consider self-medication as a part of
272 self-care, 12.6% were agree with acceptability of self-medication for pharmacy
273 students, but 4.1% accept that self-medication is NOT acceptable at all and it would
274 be harmful.
275 Our study had some limitations and we faced some complications during it. First of
276 all, we covered only fifth year pharmacy students in Near East University due to
277 shortage of time for the research work. So, if we had conducted the study among
278 more years we would have got a more extensive scenario on the self-medication
279 practice. Second, ~~we couldn't reach the hall number of students because the~~
280 ~~semester was almost finished and the lectures had been finished, so collecting data~~
281 ~~from them was slightly difficult~~. ~~Third,~~ we did the study in just one university (Near
282 East University), though if we conducted it among many universities, we would get
283 more comprehensive results. ~~Finally, social desirability bias may have impacted the~~
284 ~~responses since the interviews were done in personally.~~
285 Also, the survey didn't differentiate between the uses of OTC drugs in self-
286 medication vs. prescription drugs such as antibiotics and may have resulted in
287 misunderstanding and confusion among respondents.
288
289 4. CONCLUSION
290 The practice of self-medication is prevalent amongst fifth year pharmacy students
291 even with adequate knowledge and awareness about the consequences.

Comment [NAT36]: Reference

Comment [NAT37]: ?self medication is a part of self medication

Comment [sy38]: Fi

Comment [NAT39]: Why the time was short? You collected data in single data in single day as mentioned in your abstract

Comment [sy40]: We faced some complications during doing the study as well as we couldn't reach the hall number of students because the semester was almost finished.

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Comment [sy42]: Done, thank you!

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Comment [NAT44]: Were interviews done personally? Or questionnaire was distributed and collected

The high prevalence of self-medication is driven by multi factors, some of them cannot be modified easily as healthcare. Proactive pharmacist may contribute in management of minor illness and rationalized self- medication.

COMPETING INTERESTS
Authors declare no competing interests.

ETHICAL APPROVAL
The study was approved by the Near East Institutional Reviews Board (IRB) of Near East University Hospital that assigned this research as an observational study.

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