IJABBR- 2017- eISSN: 2322-4827

International Journal of Advanced Biological and Biomedical Research, 5(2), (2017) 79-84

Journal homepage: www.ijabbr.com

Research Article

DOI: 10.18869/IJABBR.2017.465

Assessment of the Knowledge and Attitude of Pharmaceutical Students Around Self-medication, Common Medicines and DPIC

Amir Shamshirian[1], Atiyeh Ghorbanpour[1], Behzad Jahanpanahi[2], Mahsa Mohammadyan[2], Reza Sedaghat-Nezhad [2], Mohammad Karami*[3]

[1]Department of Laboratory Sciences, Student Research Committee, School of Allied Medical Science, Mazandaran University of Medical Sciences, Sari, Iran
[2]Student Research Committee, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran
[3]Department of Toxicology, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran
[4]Pharmaceutical Sciences Research Center, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran

ARTICLE INFO

Article history:
Received: 29 Jan 2017
Revised:19 Feb 2017
Accepted: 25 Mar 2017
ePublished: 30 Apr 2017

Key words:
Pharmacy
Drug
Students
Self-medication
DPIC

ABSTRACT

Objective: The aim of this study is to assess the knowledge and attitude of pharmaceutical students around self-medication, common medicines and Drug and Poison Information Center (DPIC) for the first time. **Methods:** This cross-sectional study was carried out on 204 pharmaceutical students. Data were collected using questionnaire including socio-demographic questions, general and specialized information about Drugs, DPIC, and drugs side effects. All analysis conducted using the SPSS 16.0 software. **Results:** Of the total 204 participants, 93(45.6%) respondents were males and 111(54.4%) of them were females by the mean age of 22.05 (±1.5). More than half of the respondents (52%) had no information about DPIC and its functions. Approximately 44% of students have a consultation with a pharmacist for drug use. Averagely, only 39.88% of students had suitable drugs information. Significant relationship was observed between age and medicine consultation (P = 0.025). **Conclusion:** This study showed that the pharmaceutical students had a poor knowledge about the prevalence of using different drugs and DPIC's functions. Country's medical system is still facing the problem of uncontrolled usage and also a lack of knowledge, so it is recommended to perform comprehensive studies for finding factors that effect on students' awareness to improve their academic performance.

Introduction

Self-medication means buying and using medicine without a prescription and it is reported that is on the rise and this illogical usage of medicines is a global issue that patients included in it for different reasons in different ways such as excessive use of medicines, using inappropriate antibiotic dose, usage of antibiotics against nonbacterial infections, excessive use of injections instead of appropriate oral medication, inappropriate prescribing, reuse of this prescription, use of herbal medicine and self-medication (Asmelashe Gelayee et al., 2017; Jakaria et al., 2017; Sharma, Gurung, et al., 2017). One of the most important self-medication problems is wastage of resources, increasing resistance to microorganisms that will cause disease and in general cause serious health risks such as adverse reactions and long-term suffering (Varadarajan et al., 2017). Some factors such as gender, medical information, income, and

***Corresponding Author:** Mohammad Karami, Department of Toxicology, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran. (toxkarami@gmail.com)

self-care are effect on self-medication, and also attitudes on medicines usage, determining by medical information and self-care (Tarazi et al., 2017) and all of these statements are due to lack of awareness of the drugs and their side effects.According to previous studies, globally; Half of the people who turn to treat their disease, wait until the disease has run its course or using home remedy, nearly 25% of people prefer to visit a doctor or use the prescription that has already been used in the same condition, and the remaining cases are turning to nonprescription drugs known as Over-the-counter medicine (OTC) (Sharma et al., 2017). Due to the World Health Organization (WHO), half of all drugs prescribed, distributed and traded incorrectly, and also half of the patients taking their medications are not satisfied (Asmelashe Gelayee et al., 2017).

Analgesics and antimicrobial drugs are the most common medicines that are used for self-medication and toward antimicrobial medicine usage, studies reported 3-19% of antimicrobial self-medication in general population of developed countries and 9-100% in developing countries (Varadarajan et al., 2017; Zhu et al., 2016). It is reported that 83.3% of people treat diseases in different ways of self-medication in Iran and also WHO reported that Iran is in the list of top 20 countries that have the highest usage of medicine globally, and it is in the second place in Asia after China (Alavi et al., 2010; Shamsi et al., 2009). According to the other studies on university students of some countries in Middle-East, Iran by 83% of self-medication rate was in the first place and it is also interesting to note that field of health economy and management allocated the highest percentage of self-medication (Kahnamouei-aghdam et al., 2017).

Recently, consumption and use of medicines have the global increase and estimated that by the year 2016, the global annual cost of medication will reach to *$*1.2 trillion (Asmelashe Gelayee et al., 2017).

One of the centers associated with health care units which are based on a trained professional team that provide accurate and factual information about drugs and poisons is Drug and Poison Information Center (DPIC). In this organization, physicians and pharmacists use valid and up-to-date sources in the world to advise on drug dosage, drug interactions, poisoning, *etc*. (Ghane et al., 2015).

The services of the DPIC include diagnosis and prevention of adverse drug reactions, drug mistakes and promotion of rational use of the drug, which, by preventing drug abuse and providing clinical advice, have a very important role in improving treatment outcomes and in reducing healthcare costs all over the country (Kearney et al., 1995; Oder et al., 2013; Vassilev, et al., 2009). According to that drug consumption in the country has no correct pattern and efforts to reform this trend did not have much success, country's medical system still faces the problem of uncontrolled usage and self-medication. Moreover, improvement of awareness about DPIC among society can help to reform this pattern and lack of the studies on the subject among pharmaceutical students, due to the important role of students, because of social status and contact with the people in their future jobs as the health behavior models for other people, we aimed to study on assessing the public and specific knowledge of pharmaceutical students especially on DPIC at Mazandaran University of Medical Sciences in 2017 for the first time in Iran.

Materials And Methods

Study Design

This questionnaire survey based cross-sectional study performed on assessment of common drugs information and self-medication among students in the faculty of pharmacy at Mazandaran university of medical science in 2017. Sampling was randomly and the sample size based on Cochran formula with an accuracy of 5% and a confidence level of 95% was calculated, 220 people. So, participants were 220 students of Mazandaran university of medical science who study pharmacy.

Data collection

Data was collected by questionnaire designed by Food and Drug Department of Mazandaran province that consisted of 3 parts of 2 pages including socio-demographic questions (such as gender, course, age, *etc*.), general information about Drug and Poison Information Center (DPIC) (such as its function, members *etc*.) and questions for studies the students' awareness of utilization of drug counselor and also their information about drug side effects.

Two members of our team asked students to fill out anonymous questionnaire completely voluntarily and explained to them that the questionnaire is designed with the purpose of research. It was done in the classrooms and dormitories. Each researcher analyzed the data individually and sent the report to the principal investigator. The principal investigator collected all the data for analysis. Sixteen questionnaires due to various reasons such as missing and incomplete filling were excluded from the study.

Data analysis

To analyze the data, socio-demographic information's percentage, variables of questions part's percentage, mean and standard deviations (M±SD) were calculated. Chi-square test was used to compare descriptive data. Statistical significance and its level was set at less than 0/05. All analysis conducted using the Statistical Package for the Social Sciences 16.0 (SPSS *Inc., Chicago, IL, USA*) software.

Results

Overall, 204 students of Mazandaran University of Medical Sciences from the faculty of pharmacy have answered the questionnaire of the study. Of all, 93(45.60%) respondents were male and 111(54.40%) of them were female by the mean age of 22.05 (±1.5) from

18 to 25 years old. Nearly 1/3rd of the students (29.40%) were in the age 22. Regarding semester of education, 50(24.50%) of the students were passed 8 terms. Nearly two-thirds of the participating students (87.3%) passed the basic science courses [Table 1].

Table1: Demographic information of respondents (N=204)

Category		**Frequency** (%)
Gender	Male	93(45.6)
	Female	111(54.4)
Age in year	18	6(2.9)
	19	10(4.9)
	20	11(5.4)
	21	34(16.7)
	22	60(29.4)
	23	47(23.0)
	24	34(16.7)
	25	2(1.0)
Term of study	2	16(7.8)
	4	10(4.9)
	5	2(1)
	6	29(14.2)
	7	37(18.1)
	8	50(24.5)
	9	28(13.7)
	10	19(9.3)
	11	13(6.4)

According to Table 2, more than half of the respondents (52.0%) had no information about DPIC. Moreover, less than half of the students (44.1%) remarked that they have a consultation with a pharmacist for drug complication or dosage determination. Most of the students (81.9%) were satisfied for drug consultation, but only 55(27.0%) of them had complete satisfaction of the pharmacist in the pharmacy due to getting enough information about drugs. Regarding generic and most used drugs information, although 163(79.9%) of students knew that dexamethasone has the most side effects among corticosteroids, only 52(25.5%) of them were aware of that dexamethasone is the most used drug in our country recently. In addition, antibiotics had the most common side effects of medication category in Iran in recent years,

however, just 59(28.9%) of respondents were aware of this subject. Moreover, less than half of the students 87(42.6%) knew that drugs injection has the most side effects among other ways of drugs consumption.

Table2: Questions (N=204)

Questions Part A: General information	**Frequency (%)**		
	H	**M**	**N**
Knowledge about DPIC	59(28.9)	39(19.1)	106(52.0)
Consultation with pharmacist	72(35.3)	90(44.1)	42(20.6)
The satisfaction of the pharmacist in the pharmacy	55(27.0)	112(54.9)	37(18.1)
Awareness about the hospital pharmacist	94(46.1)	56(27.5)	54(26.5)
Questions Part B: Pharmaceutical information	**Frequency (%)**		
	CA		**IA**
The most used medicine	52(25.5)		152(74.5)
Ways of taking medicine	87(42.6)		117(57.4)
The most common side effects of categories of medicines	59(28.9)		145(71.1)
The most side effects of cortisone drugs	163(79.9)		41(20.1)
Average medicine prescriptions of province	46(22.5)		158(77.5)

H: High, M: Moderate, N: Non, CA: Correct answer, IA: Incorrect answer

Only 46(22.5%) of students were aware of the average of medical prescriptions in Mazandaran province. As expected, a significant relationship was observed between age and reduction of the self-medication (P = 0.025), but contrary to expectations, there was no significant relationship between the semester and the reduction in self-medication (P = 0.217). According to the results, gender also had no relation to this subject (P = 0.526).

Discussion

The aim of this study is to discuss the knowledge and attitude of pharmaceutical students around self-medication and Drug and Poison Information Center (DPIC).

The findings indicate that on average, 54.5% of students did not have any knowledge about this organization, its function, and its members. Regarding this subject, the two studies conducted by Ghane (Ghane et al., 2016; Ghane et al., 2013) and colleagues in 2011 and 2014 showed that the community was less aware of DPIC and according to phone calls with this center, the main reason for poisoning in the country was pharmaceutical-related products, due to the lack of awareness of the community about the drug information and self-medication.

Thus, the introduction of the professional system of Iran's DPIC to people can play a very important role in their awareness of the consumption, safety, and preservation of drugs. Hence, pharmaceutical students as future pharmacists should have full and advanced information about this organization and its functioning in order to guide the people in the right direction of health, prevention, and treatment. Therefore, due to the results of this study, which indicates the poor knowledge of pharmaceutical students in this regard, regular and advanced educational measures should be considered to promote this gap.

Approximately 73.6% of respondents had a positive opinion about the duties of the hospital pharmacist and their necessity in hospitals. Besides, in the study was performed by Barati *et al*. (Barati et al., 2016) regarding "*Accreditation status of hospital pharmacies and their challenges of medication management*", extremely emphasis has been put on the importance of the presence of pharmacists, clinical pharmacists and even pharmaceutical students in different wards of the hospital to guide and educate patients. Moreover, it is also pointed out the importance and feedback of the cooperation of pharmacists and physicians in the preparation of national guidelines and monitoring of patient's record prescriptions and its adaptation to the medication use guidelines.

In addition, In the other study on the importance of "*Pharmacist Impact on Care*", Cies *et al*. (Cies et al., 2013) they stated that the teamwork of pharmacists with the medical team of the hospital can help to the management of drug consumption and also reduce the patient's hospitalization time. On the subject of drug consultation, approximately 80% of the students stated that they are referring to the pharmacist for confirming the prescribing of a physician and advice on drug intake, which is associated with satisfactory results. Considering the importance of the subject of drug counseling, many studies have been conducted on this topic and stated that designing cooperative care models for patients not only attracts their satisfaction but also increases the accuracy of treatment and reduces the risk of misdiagnosis (Hale et al., 2016; Latter et al., 2011; Smalley, 2006; Stewart et al., 2008). Moreover, Patients have a positive attitude toward participation and decision in way of their treatment and makes them confident. Therefore, turning to these approaches can be a positive and effective development in the health system of the country.

In addition, while most students spend their practical training in the various cities of the province, only 22.5% of them were aware of the average medicine prescriptions of Mazandaran.

In the pharmaceutical information section, surprisingly, only less than half of the students (39.88%) had chosen

the right answer. So that, due to the widespread use of corticosteroids in inflammatory and immune-related diseases and other conditions (Coutinho et al., 2011; Grunberg, 2006), country statistics show that the highest rate of an injectable drug prescription is for corticosteroids following by the most prescription of dexamethasone among corticosteroids which has a high rate of side effect (Bahmani et al., 2016; Berthelot et al., 2013). In this study, although most students (79.9%) knew that the most side effects of corticosteroid treatments are related to dexamethasone, but unexpectedly, only 25.5% of the students knew about the high rate of prescription.

Using antibiotics for non-bacterial infections is an illogical way of using drugs that result from a lack of awareness (Asmelashe Gelayee et al., 2017). So that, in the survey which was done by Scaioli *et al*. (Scaioli et al., 2015) in the school of medicine of Torino University in Italy on antibiotic usage, it was found that approximately 20% of students believe that antibiotics can be effective against the viral infection. Moreover, the study conducted in the form of an online questionnaire with the same subject among students at a Chinese University in 2011 by Zhu *et al*. (Zhu et al., 2016) showed a 43.5% positive belief in the use of antibiotics against viral infections. By following the statements and according to Food and Drug Administration of Iran and also Mazandaran the most commonly reported drug side effects are related to antibiotics. However, only 28.9% of pharmaceutical students were aware of these statistics.

Another illogical way in using drugs is excessive injection when oral intake can be more useful because the most side effects of drugs appear due to injection (Asmelashe Gelayee et al., 2017). Nevertheless, more than half of the participants were not aware of it.

The remarkable point of this study is the fact that no study has been conducted on the awareness of the students, especially pharmaceutical students about DPIC system so far and it seems that this research has been carried out for the first time in the country. Moreover, the study also provided an overview of pharmaceutical students' information in the faculty of pharmacy at Mazandaran University of Medical Sciences, which was not reported yet. Regarding limitation of this study we can point to the fact that although our evaluation was limited to pharmaceutical students, by expanding our study to all students in different fields, we could provide more comprehensive information and certainly, by increasing the sample size, more accurate results could have been obtained.

Conclusion

According to the results of this study, the knowledge of pharmaceutical students of Mazandaran University of Medical Sciences was less than 50% of Drug and Poison Information Center, complications of self-medication, common drugs usage and statistical information of drug consumption over the country and Mazandaran province. Therefore, it is expected that students in this field will have a thorough knowledge of the pharmacology and pharmacy due to their important role in the future as pharmacists to guide people. Hence, it seems to be necessary to perform a more comprehensive investigation on the topic to find appropriate approaches to increase awareness and educate these students. Besides, the introduction of DPIC into the public and medical community as a vital guide can be a major step towards reducing drug misuse.

Conflict Of Intrest

All authors declared no conflicts of interest

Authors' Contributions

AS: study design, data collection, data analysis, write and revise the primary and ending drafts of the full text. AGh: data collection, review the manuscript. BJ: data collection. MM: reviewed the manuscript. RS: data collection. MK: supervising on the study, review the manuscript. The final manuscript revised and approved by all authors.

Acknowledgements

The authors would like to say their thanks to the student research committee of Mazandaran University of Medical Sciences for supporting this study project with the code 52 adopted on April 23, 2016. We also express our gratitude to the Food and Drug Administration of Mazandaran University of Medical Sciences and Dr Mina Amini for preparing the questionnaire.

References

Asmelashe Gelayee, D., & Binega, G., 2017. Assessment of Medication Use among University Students in Ethiopia. *The Scientific World Journal, 2017*.

Bahmani, R., Moghaddam, G., & Noubarani, M., 2016. Prescription Pattern of Corticosteroids in Zanjan, Iran. *Iranian Journal of Pharmaceutical Sciences, 12*(4), 63-68.

Barati, O., Dorosti, H., Talebzadeh, A., & Bastani, P., 2016. Accreditation status of hospital pharmacies and their challenges of medication management: A case of south Iranian largest university. *Journal of advanced pharmaceutical technology & research, 7*(3), 70-74. doi:10.4103/2231-4040.184590

Berthelot, J. M., Le Goff, B., & Maugars, Y., 2013. Side effects of corticosteroid injections: what's new? *Joint Bone Spine, 80*(4), 363-367. doi:10.1016/j.jbspin.2012.12.001

Cies, J. J., & Varlotta, L., 2013. Clinical pharmacist impact on care, length of stay, and cost in pediatric cystic fibrosis (CF) patients. *Pediatric pulmonology, 48*(12), 1190-1194.

Coutinho, A. E., & Chapman, K. E., 2011. The anti-inflammatory and immunosuppressive effects of glucocorticoids, recent developments and mechanistic insights. *Molecular and Cellular Endocrinology, 335*(1), 2-13. doi:http://dx.doi.org/10.1016/j.mce.2010.04.005

Ghane, T., Behmanesh, Y., & Khazaei, F., 2015. Annual Report of Recorded Phone Calls to Iran's Drug and Poison Information Centers (2014-2015). *Asia Pacific Journal of Medical Toxicology, 4*(3), 97-101.

Ghane, T., Behmanesh, Y., & Khazei, F., 2016. Annual report of drug and poison information in Iran from March 2012 to March 2013. *Acta Medica Iranica, 54*(8), 525-529.

Ghane, T., Saberi, S., & Davoodabadi, M., 2013. Descriptive Analysis of Recorded Phone Calls to Iran Drug and Poison Information Centers during 2011-2012. *Asia Pacific Journal of Medical Toxicology, 2*(2), 48-51.

Grunberg, S., 2006. Antiemetic activity of corticosteroids in patients receiving cancer chemotherapy: dosing, efficacy, and tolerability analysis. *Annals of Oncology, 18*(2), 233-240.

Hale, A., Coombes, I., Stokes, J., Aitken, S., Clark, F., & Nissen, L., 2016. Patient satisfaction from two studies of collaborative doctor–pharmacist prescribing in Australia. *Health Expectations, 19*(1), 49-61.

Jakaria, M., Hasant, A., Tarek, M., Islam, M., Zaman, R., Parvez, M., . . . Ali, M., 2017. Evaluation of Self Medication among Students from Different Universities in Chittagong, Bangladesh. *Journal of Medicine, 18*(1), 15-20.

Kahnamouei-aghdam, F., Zakeri, A., Amani, F., Sajjadifar, M., Mohammadi, P., & Ojaghi, H., 2017. Self-medication prevalence and related factors among medical university students, 2015. *2017, 6*(2), 4. doi:10.18203/2319-2003.ijbcp20170332

Kearney, T. E., Olson, K. R., Bero, L. A., Heard, S. E., & Blanc, P. D., 1995. Health care cost effects of public use of a regional poison control center. *Western journal of medicine, 162*(6), 499.

Latter, S., Blenkinsopp, A., Smith, A., Chapman, S., Tinelli, M., Gerard, K., . . . Nicholls, P., 2011. Evaluation of nurse and pharmacist independent prescribing.

Masoudi Alavi, N., Alami, L., Taiefi, S., & Sadafi, Z., 2010. Self treatment in diabetes mellitus in Kashan. *Iranian Journal of Endocrinology and Metabolism, 12*(3), 237-242.

Oder, M., & Põld, K., 2013. Estonian experience on establishment of a modern national poison information centre: one-year profile of phone calls in 2012. *Asia Pacific Journal of Medical Toxicology, 2*(2), 42-47.

Scaioli, G., Gualano, M. R., Gili, R., Masucci, S., Bert, F., & Siliquini, R., 2015. Antibiotic use: a cross-sectional survey assessing the knowledge, attitudes and Practices amongst Students of a School of Medicine in Italy. *PLoS One, 10*(4), e0122476.

Shamsi, M., Tajik, R., & Mohammadbegee, A., 2009. Effect of education based on Health Belief Model on self-medication in mothers referring to health centers of Arak. *Arak Medical University Journal, 12*(3), 57-66.

Sharma, D., Gurung, D., Kafle, R., & Singh, S., 2017. Knowledge and practice on over-the-counter drugs among adults of age group 20 and above residing in Chapapani-12, Pokhara, Kaski, Nepal. *2017, 3*(3), 8. doi:10.18203/issn.2454-2156.IntJSciRep20170887

Smalley, L., 2006. Patients' experience of pharmacist-led supplementary prescribing in primary care. *Pharmaceutical Journal (Vol 276)*.

Stewart, D. C., George, J., Bond, C. M., Cunningham, I. S., Diack, H. L., & McCaig, D. J., 2008. Exploring patients' perspectives of pharmacist supplementary prescribing in Scotland. *Pharmacy world & science, 30*(6), 892-897.

Tarazi, S., Almaaytah, A., Al Laham, N., Ayesh, B., & Arafat, H., 2017. Prevalence of Self-Medication Practice Among Al-Azhar Medical Laboratory University Students Gaza Strip–Palestine. *PARIPEX-Indian Journal of Research, 5*(10).

Varadarajan, V., Paul, C. M. P., Swapna, S., Preethi, S., Kumar, K., & PU, D. D., 2017. A cross sectional study on the prevalence of self-medication in a Chennai based population, Tamil Nadu, India. *International Journal Of Community Medicine And Public Health, 4*(2), 418-423.

Vassilev, Z. P., Chu, A. F., Ruck, B., Adams, E. H., & Marcus, S. M., 2009. Evaluation of adverse drug reactions reported to a poison control center between 2000 and 2007. *American journal of health-system pharmacy, 66*(5).

Zhu, X., Pan, H., Yang, Z., Cui, B., Zhang, D., & Ba-Thein, W., 2016. Self-medication practices with antibiotics among Chinese university students. *Public health, 130*, 78-83.

How to cite this manuscript: Amir Shamshirian, Atiyeh Ghorbanpour, Behzad Jahanpanahi, Mahsa Mohammadyan, Reza Sedaghat-Nezhad, Mohammad Karami. Assessment of the Knowledge and Attitude of Pharmaceutical Students Around Self-medication, Common Medicines and DPIC. International Journal of Advanced Biological and Biomedical Research 5(2), 2017, 79-84, DOI: 10.18869/IJABBR.2017.465.