



# Sources of Drug Information and the Rate of Reading Patient Information Leaflets by Medical Sciences Students

Ameneh Nasiri<sup>1</sup>, Bahareh Gholami Chaboki<sup>2</sup>, Seyed Soheil Saeedi Saravi<sup>3</sup>, Mojgan Nazari<sup>4\*</sup>

<sup>1</sup>Student Research Committee, School of Paramedical Sciences, Guilan University of Medical Sciences, Rasht, Iran

<sup>2</sup>School of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>3</sup>Department of Toxicology–Pharmacology, Faculty of Pharmacy, Guilan University of Medical Sciences, Rasht, Iran

<sup>4</sup>School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran

## Abstract

**Background and aims:** Patient information leaflets (PILs) are the best form of written information transfer. The aim of this study was to investigate the sources of drug information and the reading rate of PILs among medical sciences students.

**Methods:** Three hundred students were entered in this cross-sectional study via simple random sampling at the Faculty of Paramedical, Nursing and Midwifery of Guilan University of Medical Sciences in 2018.

**Results:** The participants considered the physician as the most reliable source for receiving drug information. Pharmacists, PILs, and the Internet were mentioned as the next sources, respectively. About 15.3% of people always read PILs. Students used PILs along with other sources of drug information.

**Conclusion:** The type of medication and the individuals' need for the type of information, along with the structure and presentation of the materials in the PILs, are all contributing factors.

**Keywords:** PIL, Drug use, Drug information, Students

## \*Corresponding Author:

Mojgan Nazari,  
Assistant Professor in  
Reproductive Health, School  
of Nursing and Midwifery,  
Guilan University of Medical  
Sciences, Rasht, Iran.  
Tel: +98 9188116404 –  
01342565060;  
Email: mnazari@gums.ac.ir,  
moj.na1346@gmail.com

Received: 8 April 2020  
Accepted: 23 Aug. 2020  
ePublished: 30 Dec. 2020



## Introduction

During the treatment process, knowing the drug and controlling how it is used can be done via oral or written instructions. In using oral instructions, there is the possibility that information is forgotten, not well understood by people, or there will not be enough time to convey information.<sup>1,2</sup> Therefore, patients today seek to receive written information.<sup>3</sup> Although patient information leaflets (PILs) cannot replace communication with a physician,<sup>1</sup> they are the best tool for educating patients so that they can use their medications in the best way and benefit from the treatment.<sup>4</sup>

Since receiving information from other sources and physical characteristics of drug leaflets can affect the rate of reading PILs, it has been tried in this study to investigate other sources to receive drug information and some effective features in studying PILs. The purpose of this study was to determine the receiving of drug information sources and the rate of reading PILs among paramedical students. The results of this study will be used for improvement in the practice of drug leaflets, and ultimately increase in the rate of reading PILs in the community.

## Methods

This cross-sectional study was performed in the Faculty of

Paramedical, Nursing and Midwifery of Guilan University of Medical Sciences in 2018. The total number of students was about 1000 in all fields. According to Morgan table and taking into account the accepted error of 0.05, the sample size was 278 students, which was determined to be approximately 300 students with 10% drop. Non-internship undergraduate students who were present in the faculty entered the study voluntarily and randomly. Based on the opinions of expert group, the Lawshe table was used and CVI = 98% and CVR <62% were determined. The Cronbach's alpha coefficient of 70% was determined by questionnaire given to 30 students before the study.

## Results

In this study, the average age of students was 21 years. Nearly, 22% of the statistical population in this study were male and 78% female, and 19.4% were anesthesiologists, 20% operating room specialists, 19% laboratory scientists, 10.3% radiologists, 14% midwives, and 17.3% nurses in terms of their field of study. About 9% of participants reported that they didn't need supplementary information before taking the drugs. Nearly, 7.3% of participants received supplementary information only for expensive and special drugs.

Only 15.3% of people always read PILs and did not take

the medication without reading them (Group A, Table 1). Nearly, 7.3% of students never read the brochures and the reading rate was lower in 77.4% of the rest of the people (Group B, Table 1). The reasons for these people for not caring about reading PILs among 40% was lack of time and interest, and 41.3% reported that the information taking from physicians and pharmacists is enough.

The main purpose of reading PILs in 62.7% of the

subjects was to obtain more information and 52.3% of the statistical population reported the Internet as an alternative source of PILs. Table 2 shows the influenceability of reading of PILs from the physical properties and information mentioned in the brochures in the form of two-choice questions (yes-no).

In this study, leaflets of cardiovascular and neuropsychiatric drugs were decided as the most important

**Table 1.** Participants' opinions about PILs studying

Multiple-Choice Questions	Total n (% of 300)	Group A <sup>a</sup> n (% of 46)	Group B <sup>b</sup> n (% of 254)
What are your goals of reading the PILs?			
I acquire more information about the drugs that I am taking	188 (62.7)	40 (87.0)	148 (58.2)
I Perceive my disease more, after studying	48 (16.0)	2 (4.3)	46 (18.1)
I don't have perfect trust to physician and pharmacist's recommendations	6 (2.0)	0 (0)	6 (2.4)
I can control my treatment stages well	58 (19.3)	4 (8.7)	54 (21.3)
How would you acquire information if the PILs were not available?			
Physician	64 (21.3)	14 (30.4)	50 (19.7)
Pharmacist	42 (14.1)	2 (4.3)	40 (15.7)
Internet	157 (52.3)	28 (61)	129 (50.8)
I would not search further for any information	37 (12.3)	2 (4.3)	35 (13.8)
What would you do in case of finding the drug dosage written in PILs contradictory to what has been prescribed by the physician or pharmacist?			
I disregard the PILs and trust the physician and pharmacist's diagnosis and so continue to use drug	130 (43.3)	17 (37.0)	113 (44.5)
I observe the PILs instructions and discuss it with the physician and pharmacist	132 (44.1)	26 (56.5)	106 (41.7)
I take the drug as written in PILs and do not trust the physician and pharmacists advice	7 (2.3)	2 (4.3)	5 (2.0)
I acquire information from other sources	31 (10.3)	1 (2.2)	30 (11.8)
What is your reactions to side effects and use prohibitions written in PILs?			
I pay attention to them and discuss it with the physician and pharmacist	115 (38.3)	20 (43.5)	95 (37.4)
I pay attention to them and stop taking the drug without referring to the physician	36 (12.0)	5 (10.8)	31 (12.2)
I disregard the mentioned side effects if they are mild and not worrisome	122 (40.7)	20 (43.5)	102 (40.2)
I acquire information from other sources and ascertain the accuracy of PILs' information, and would stop taking the drug if it is extreme	27 (9.0)	1 (2.2)	26 (10.2)

<sup>a</sup> Group A: not taking medicine without first studying the PILs, <sup>b</sup> Group B: shortly studying or not studying the PILs.

**Table 2.** Participants' opinions about PILs

Two-Choice (Yes-No) Questions	Yes n (% of 300)	No n (% of 300)
Are the materials mentioned in PILs sufficient?	146 (48.7)	154 (51.3)
Are the information provided in PILs trust worthy?	243 (81)	57 (19)
Are the information provided in PILs comprehensible?	268 (89.3)	32 (10.7)
Does the comprehensible information cause the PILs to be studied more frequently?	278 (92.7)	22 (7.3)
Are PILs' layout and differences in writings' fonts influence in your study?	201 (67)	99 (33)
Do you withdraw reading the PILs written in languages other than Persian?	195 (65)	105 (35)
Does expensive price of the drug influence in your study degree?	125 (41.7)	175 (58.3)
Does the place of produced drug, inside or outside the country, influence the degree of your study?	143 (47.7)	157 (52.3)
Are you willing to study the PILs even with adequate information you have acquired from your physician?	186 (62)	114 (38)
Are you willing to study the PILs even when you have already referred to university textbooks?	239 (79.7)	61 (20.3)
Can PILs' study be accompanied by anxiety about medication interactions?	135 (45)	165 (55)
Can the medication information on the internet make you needless of PILs' study?	83 (27.7)	217 (72.3)
Can PILs' study reduce the future occupational mistakes?	208 (69.3)	92 (30.7)

ones for the study. About 51.7% of the subjects gave full marks for the importance of reading these two types of leaflets, while the leaflet of non-narcotic pain relievers was selected with the lowest score (4.86) (Figure 1).

Participants showed ways to obtain drug information by scoring. The physician was considered the most suitable source for receiving drug information, with people having a history of taking drugs in the next placements of scoring the source of obtaining drug information (Figure 2).

## Discussion

According to the results of this study, the majority of students obtained their drug information through PILs and other sources before taking the drug. The reason for reading the PILs was to obtain more information about the drug used, which is similar to the previous study<sup>5,6</sup> Educated people are usually looking for more medical information to be able to get involved in their own decisions.

In this study, 7.3% of people had never read the PILs. In a review study, well-educated patients were able to take their medications correctly in addition to meeting their medical needs. This ability has been more limited in less literate people.<sup>7</sup> In a study in Iran, Nader et al. showed that in a society with 26% of people with university education, 31% of people never read PILs.<sup>2</sup> Because the subjects all had university education, the level of reading PILs among students in this study was lower than expected compared to Nader et al.'s study.

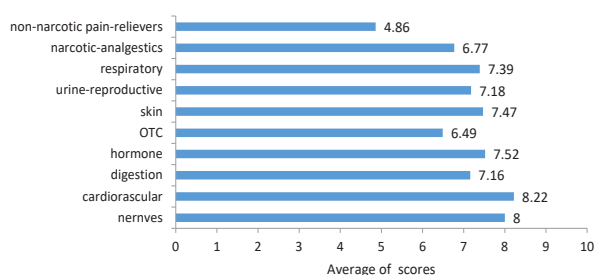
In the present study, 45% of the subjects developed anxiety after studying the side effects. In a study, some participants believed that only serious side effects should be considered and unlikely sections should be omitted for this section, because the writings about the side effects

of medications raised doubts about the continued use of them.<sup>1</sup> Using qualitative words and not specifying the exact possibility of side effects can lead to misinterpretation of the side effects of the drugs.<sup>8,9</sup> One of the purposes of PILs is to provide the patients with accurate information. Patients are reluctant to receive vague information that leads to doubts about their continued treatment.<sup>10</sup> This section should be further explored while being important in PILs.

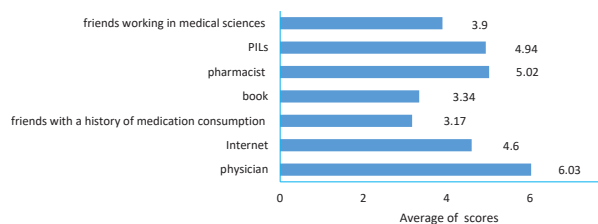
According to the opinions of the students in this research, the layout of PILs, the difference in the font of the writings, and their preparation in non-native languages can affect their reading rate. In previous studies, being long and short, the presence of a large volume of content, and fine font in the writing of PILs had a deterrent effect on the study.<sup>1,10,11</sup> Because the comprehensibility and usefulness of the information written in the PILs is very important for patients,<sup>6,12</sup> so when the information is written in such a way that patients have the ability to read and easily understand the material, they are encouraged to read them more. As a result, patients' knowledge of their medication increases<sup>4</sup> and patients are encouraged to complete the treatment process.<sup>12,13</sup> In the present study, the information contained in the PILs was comprehensible to most people and this matter affected their reading rate. This is probably because the subjects were studying in medical sciences, and the information in the PILs was more comprehensible than that in the studies in which the educated and the uneducated were examined at the same time.

The subjects in this study determined doctors and pharmacists as the most important source of information. This is similar to the results of previous studies.<sup>5,6,14</sup> Herber et al showed that PILs could not replace a physician's oral explanation, and many people preferred to be told the contents of the PILs orally by a physician.<sup>1</sup> According to Dickinson et al., individuals tend to seek general information from PILs and specific information about themselves from physicians.<sup>10</sup> Also, the emphasis of pharmacists and physicians on reading PILs can affect patients' attention to their reading.<sup>10,15</sup> Our assessment is that due to having accurate knowledge of the disease and the relevance of their specialized knowledge, physicians and pharmacists are respectively important and accurate sources of information, but due to lack of easy access to them or lack of necessary advice from them, individuals replace other sources for obtaining information.

In the absence of PILs, the Internet was an alternative source of pharmaceutical information. The choice of the Internet as a source of pharmaceutical information is probably due to having sufficient knowledge to use it, the large number of virtual pages containing pharmaceutical information such as sites and weblogs, greater ease of access to information through it compared to other sources of pharmaceutical information, and a significant expansion of Internet access tools in Iran.



**Figure 1.** Bar Chart Showing Average Mean Scores in the Extents of Studying Various PILs Among the Participants.



**Figure 2.** Bar Chart Showing Average Mean Scores in the Ways of Acquiring Medication Information Among the Participants.

### Limitations of the study

The narrow range of age among participants was the limitation of this study.

### Conclusion

Getting information from a doctor, pharmacist, and the Internet was an influential factor in reading the PILs. The physical appearance of the PILs also affects the reading rate of the students.

### Conflict of Interest Disclosures

None.

### Ethical Approval

This study was approved by the ethical committee of *Guilan University of Medical Sciences* (Ethics No. IR.GUMS.REC.1396.476).

### Acknowledgments

The research design of this article (No. 96100205) was approved by the Student Research Committee of the Research and Technology Branch of Guilan University of Medical Sciences. Therefore, we thank this deputy for the financial support of the project, as well as those who helped in preparing the questionnaire. We also appreciate the efforts of Dr. Aboozar Ramezani, the esteemed director of the library, who helped us advance this project.

### References

- Herber OR, Gies V, Schwappach D, Thürmann P, Wilm S. Patient information leaflets: informing or frightening? a focus group study exploring patients' emotional reactions and subsequent behavior towards package leaflets of commonly prescribed medications in family practices. *BMC Fam Pract*. 2014;15:163. doi: 10.1186/1471-2296-15-163.
- Nader F, Mousavizadeh K, Ghafourifar P. Patient sources for drug information in Iran: a questionnaire-based survey. *Pharm World Sci*. 2008;30(6):764-7. doi: 10.1007/s11096-008-9254-z.
- Grime J, Blenkinsopp A, Raynor DK, Pollock K, Knapp P. The role and value of written information for patients about individual medicines: a systematic review. *Health Expect*. 2007;10(3):286-98. doi: 10.1111/j.1369-7625.2007.00454.x.
- Kairuz T, Bye L, Birdsall R, Deng T, Man L, Ross A, et al. Identifying compliance issues with prescription medicines among older people: a pilot study. *Drugs Aging*. 2008;25(2):153-62. doi: 10.2165/00002512-200825020-00007.
- Holappa M, Ahonen R, Vainio K, Hämeen-Anttila K. Information sources used by parents to learn about medications they are giving their children. *Res Social Adm Pharm*. 2012;8(6):579-84. doi: 10.1016/j.sapharm.2012.01.003.
- Nathan JP, Zerilli T, Cicero LA, Rosenberg JM. Patients' use and perception of medication information leaflets. *Ann Pharmacother*. 2007;41(5):777-82. doi: 10.1345/aph.1H686.
- Bailey SC, Navaratnam P, Black H, Russell AL, Wolf MS. Advancing best practices for prescription drug labeling. *Ann Pharmacother*. 2015;49(11):1222-36. doi: 10.1177/1060028015602272.
- Al-Aqeel SA. Evaluation of medication package inserts in Saudi Arabia. *Drug Healthc Patient Saf*. 2012;4:33-8. doi: 10.2147/dhps.s29402.
- Zarghami M, Azari A, Ghasemi S, Hormozpour M, Hendouei N. Availability of drug key information on package inserts of psychiatric drugs manufactured in Iranian pharmaceutical companies. *Iranian Journal of Psychiatry and Clinical Psychology*. 2016;22(2):122-33. [Persian].
- Dickinson R, Hamrosi K, Knapp P, Aslani P, Sowter J, Krass I, et al. Suits you? a qualitative study exploring preferences regarding the tailoring of consumer medicines information. *Int J Pharm Pract*. 2013;21(4):207-15. doi: 10.1111/j.2042-7174.2012.00252.x.
- Fuchs J. The way forward in package insert user tests from a CRO's perspective. *Drug Inf J*. 2010;44(2):119-29. doi: 10.1177/009286151004400203.
- Burgers C, Beukeboom CJ, Sparks L, Diepeveen V. How (not) to inform patients about drug use: use and effects of negations in Dutch patient information leaflets. *Pharmacoepidemiol Drug Saf*. 2015;24(2):137-43. doi: 10.1002/pds.3679.
- Luk A, Tasker N, Raynor DK, Aslani P. Written medicine information from English-speaking countries--how does it compare? *Ann Pharmacother*. 2010;44(2):285-94. doi: 10.1345/aph.1M402.
- Närhi U. Sources of medicine information and their reliability evaluated by medicine users. *Pharm World Sci*. 2007;29(6):688-94. doi: 10.1007/s11096-007-9131-1.
- Young A, Tordoff J, Smith A. 'What do patients want?' tailoring medicines information to meet patients' needs. *Res Social Adm Pharm*. 2017;13(6):1186-90. doi: 10.1016/j.sapharm.2016.10.006.