Evaluating attitudes of pharmacy students toward pharmaceutical side effect pictograms: Ankara sample

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ABSTRACT

Pictograms are graphic symbols that facilitate international communications and express objects and the meaning of these objects. Using pictograms in health is essential to informing patients, especially in cases such as illiteracy, language problems, and multiple drugs. Pharmaceutical pictograms are thought to be helpful not only for pharmacists but also for patients.

In this regard, in this study, pharmacy faculty students' attitudes towards side effect pictograms are evaluated via the "Drug side effect pictogram attitude scale." As a result of exploratory factor analysis, a one-dimensional structure was obtained in parallel with the original scale with 0.906 Cronbach's alpha value. The mean values of the items in the scale were found above 3.70, which shows that students have positive attitudes toward side effect pictograms.

As a result, it is thought that pharmaceutical pictograms should be included more in pharmacy education to transform the positive attitudes of pharmacy faculty students towards pictograms into the behavior of using pictograms in patient counseling.

Keywords: Drug, Pharmaceutical pictogram, Pharmacist, Side effect

1. INTRODUCTION

Each patient's ability to understand health-related information varies. For this reason, pharmacist-patient communication is essential in ensuring that patients use medicine most effectively and safely. For the instructions in a prescription to be understood and implemented correctly, clear and understandable information must be provided to the patient. Sometimes, more than a verbal explanation is required in cases such as the patient being illiterate or having language problems. Montagne stated that drug information provided in written form improves the patient's knowledge, but more is needed to ensure patient compliance and enhance drug use knowledge [1]. Hence, additional information provided to patients can be beneficial. In this context, it is known that there is an increasing interest in pictograms, which consist of standardized graphics that make the messages more straightforward for the patient.

Pictograms are used in many fields, from transportation to marketing. Another area of use of pictograms is the healthcare sector. Pharmaceutical

pictograms were first discussed by the American Pharmacopoeia Commission in 1987, and 29 pictograms were presented in 1989 [2]. The American Pharmacopoeia Commission defines drug pictograms as "standardized graphic images that help communicate drug treatment instructions, precautions, and/or warnings to patients and consumers." This development was followed by 75 pictograms developed by Fédération Internationale Pharmaceutique (FIP; International Pharmaceutical Federation) in 1990 [2]. When these pictograms are examined, it is seen that the pictograms are generally prepared to provide information about the usage, form, and side effects of medications. Pictograms not only enable patients to understand drug information more accurately and easily but also provide great benefits to pharmacists when providing pharmaceutical care services [3]. There are also studies in the literature addressing the effects of the use of pictograms on the drug treatment and lifestyle of individuals with chronic diseases such as diabetes and tuberculosis [4]. Therefore, pictograms are thought to be very useful in pharmaceutical care services [5]. As Reijenen et al. stated, pharmaceutical pictograms are also useful for increasing patients' medication adherence [6].

This study aims to determine the attitudes of pharmacy faculty students regarding the pharmaceutical side effect pictograms and to evaluate the effects of gender and university on the students' attitudes.

2. MATERIALS AND METHODS

In line with the purpose of the study, a face-to-face survey was conducted with students of pharmacy faculties of three universities in Ankara. The survey took around 10 minutes to complete which included two sections. The first section comprised six questions for evaluating demographic characteristics. The second section includes the "Drug side effect pictogram attitude scale" developed and validated by Tarhan et al. [7]. There are ten items in this scale rated by a 5-point Likert scale. The Cronbach's alpha value of the original scale was 0.89.

The study population consists of 4th-grade students of the Faculty of Pharmacy of Hacettepe, Ankara, and Gazi Universities during the autumn term of the 2018–2019 academic year. The population consists of approximately 450 students. The sample size of this study was calculated with the acceptable error level method under the assumption that the sample statistics were normally distributed. Taking a confidence level of 0.05, $z = 1.96$, d (sensitivity) = 0.05, and p and q values as 0.50, the minimum sample size to reach was 207.

The obtained data was analyzed statistically with the help of the IBM Statistical Package for Social Sciences (IBM SPSS® Software) version 22. Descriptive statistics were first used, then explanatory factor analysis (EFA) was conducted. Finally, the factor scores obtained from EFA were subjected to independent sample *t*-test and ANOVA tests to examine whether gender and university had a statistically significant effect on them.

3. RESULTS AND DISCUSSION

To increase the reliability of the data obtained, the survey was applied to the maximum number of students that could be reached, and 253 students participated. 190 of the participants are female; 63 are male, and the distribution of the faculties they are enrolled in is given in Figure 1.

As can be seen in Figure 1, the university distribution of the students is very close to each other. In the survey, participants were asked whether they had heard of the term pictogram before, and it was
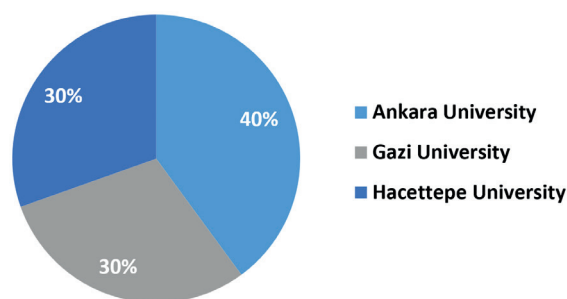

Figure 1. Distribution of universities

observed that only 33% of the participants answered yes. However, 91% of the participants think using pictograms will make it easier for pharmacists to provide pharmaceutical services. Additionally, 83% of the participants stated that it was necessary to acquire knowledge about pictograms during faculty education.

Following descriptive statistics, the data were subjected to exploratory factor analysis (EFA). First, the Kaiser-Meyer-Olkin (KMO) value was calculated to determine whether the sample size reached was sufficient for EFA. This value is generally desired to be above 0.5 [8]. As a result of the analysis, the KMO value was calculated as 0.877, which shows that the sample size is sufficient for EFA. As a result of EFA, a one-dimensional structure was obtained in parallel with the original scale, and it was determined that this structure explained 55.5% of the total variance. As a result of EFA, no item was removed from the scale, and the factor loadings of the statements are given in Table 1.

When the mean values of the responses to the items in the scale are examined, it is seen that the mean values are over 3.70 (with a maximum of 5.00). This shows that students have positive attitudes toward side effect pictograms. This result is similar with Tarhan et al. [7].

According to Table 1, all of the factor loadings are greater than 0.5. This result indicates that the "Drug side effect pictogram attitude scale" is also valid for the current sample. Additionally, Cronbach's alpha value was used to test the reliability of the scale, and this value was calculated as 0.906. Özdamar states that the scale reliability level is high when the Cronbach alpha value is between 0.80 and 1.00, and the obtained Cronbach alpha value shows that the scale is quite reliable for this sample [9].

Barros et al. put forth that pictograms are particularly helpful for older people and individuals with low health literacy [10]. Dowse and Ehlers found that pharmaceutical pictograms help to understand drug use information, especially for individuals with low literacy levels [2]. Kheir et al. revealed that pharmaceutical pictograms are useful for individuals who are illiterate and have language problems [11]. Dowse stated that pharmacy students found pharmaceutical pictograms useful [12]. The answers given by the respondents of the current study are that the pictograms will provide convenience to illiterate individuals, individuals with language problems, and elderly individuals.

Barros et al. stated that pictograms are effective in helping patients understand prescribed medications more accurately [10]. Additionally, Dowse emphasized that pharmacy students see pharmaceutical pictograms as an easy way to teach patients [11]. The findings obtained in this study also support this situation.

Yasmin et al. stated that the use of drug pictograms in patient counseling will reduce drug side effects [13]. Similarly, when the items in the scale used in this study and the answer averages are considered,

Table 1. Mean values and factor loadings of the items in the scale

Items	Mean values	Factor loadings
Side effects pictograms make individuals to understand drug-side effects easily.	4.020	0.845
Side effects pictograms make individuals to understand drug-side effects truly.	3.885	0.796
Side effects pictograms provide convenience for geriatrics.	3.758	0.795
Side effects pictograms provide convenience for nonliterate individuals.	3.770	0.769
Side effects pictograms increases patient compliance.	3.945	0.762
Side effects pictograms provide convenience for individuals with hearing loss.	4.111	0.760
Side effects pictograms provide convenience for individuals having language problems.	4.012	0.758
Side effects pictograms are effective.	4.059	0.724
Side effects pictograms should be included in medication package insert.	3.866	0.611
Side effects pictograms should be on drug boxes.	3.704	0.589

it is seen that the students think that the side effects of the drugs will be understood more efficiently and accurately by the patients while using pictograms.

Barros et al. pointed out that the use of pictograms will benefit healthcare professionals in providing better consultancy services to patients [10]. Montagne similarly emphasizes that pictograms are essential in helping patients to understand drug use more accurately [1]. In this regard, while the answers given by the participants to the question of whether drug side effect pictograms provide convenience to pharmacists were expected to create a statistically significant difference in the attitude factor, the result of the t-test was the opposite (p>0.05). It is thought that this result is due to the students' insufficient knowledge and training about the benefits of using pictograms.

Additionally, as a result of t-tests, there weren't any statistically significant differences between gender groups on factor loadings (p>0.05). Sharif et al. conducted a study about pharmaceutical pictograms with pharmacy and non-pharmacy students and similarly stated that gender did not affect the factors [3]. In this context, it seems that the result obtained is parallel to the existing literature.

Finally, an ANOVA test was applied to determine whether the universities where the students were studying had an effect on attitudes. A statistically significant difference was observed between universities at the 95% confidence interval. Tukey test was applied to determine the reason for this difference, and it was determined that the response averages of Hacettepe University students to the items in this factor were higher than the other two universities.

4. CONCLUSION

The results obtained in this study are of great importance in determining the opinions of pharmacy faculty students regarding illustrated drug use labels. Pharmaceutical pictograms are a fairly new concept for Türkiye. For this reason, in our country, where the rate of health literacy is low, it is thought that it would be beneficial for health authorities to work on pictograms in order to increase patients' compliance with treatment.

In this context, the following suggestions can be provided:

- Inclusion of topics related to pharmaceutical pictograms in pharmacy education curricula,
- Informing pharmacists about the developments regarding pictograms in Türkiye and around the world by including pharmaceutical pictograms in the in-service training of Pharmacist Regional Chambers,
- Recommend the use of pictograms by pharmacists, especially when counseling individuals who are elderly, illiterate, or have language difficulties,
- Carrying out local pharmaceutical pictogram development studies, especially for drug use and side effects.

Ethical approval

This study was conducted after Ankara University Health Sciences Ethics Committee approved the study ethically (Date:19/01/2018, Decision No: 02/27).

Author contribution

Concept: YP, MA, NT, SŞ; Design: YP, MA, NT, SŞ; Supervision: SŞ; Materials: YP, MA, NT; Data Collection and/or Processing: YP; Analysis and/or Interpretation: YP, MA, NT; Literature Search: YP, MA, NT; Writing: YP, MA; Critical Reviews: MA, SŞ.

Conflict of interest

The authors declared that there is no conflict of interest.

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