



Journal of Applied Pharmaceutical Science

Available online at www.japsonline.com

ISSN: 2231-3354
Received on: 07-12-2011
Revised on: 22-12-2011
Accepted on: 07-01-2012

Awareness and understanding of pharmaceutical pictograms in non pharmacy students: A case study

Neha Mishra, Shalini Khatri, Ruby Gehlaut, Pratushti Mittal and Sachdev Yadav

**Neha Mishra, Shalini Khatri,
Ruby Gehlaut, Pratushti Mittal
and Sachdev Yadav**

*Department of Pharmacy
Banasthali University
Banasthali Vidyapith
Rajasthan 304022, India.*

ABSTRACT

The objective of the present study was to evaluate awareness and rational use of pictogram in non pharmacy students, further comparison of locally developed, appropriate pharmaceutical pictograms with pictograms appearing in the 1991 edition of the USP-DI (United States Pharmacopoeia Dispensing Information). Twenty pictograms from the USP-DI and corresponding set of 20 locally developed pictograms conveying a medication instruction was evaluated. Respondents were evaluated for their interpretation of all 40 pictograms. The correct meaning of each pictogram was explained at the end of the study. Preference for either the Local or USP pictograms was determined. The evaluation results revealed that 61% pictograms were understood and answered correctly by Non Pharmacy Undergraduates and 56% by Non Pharmacy postgraduates. Also it was found that out of the 140 respondents only one respondent had voted for all the 20 locally prepared pictograms and had preferred absolutely no USP pictogram. Out of total number of respondents in non pharmacy undergraduates and postgraduates, 53% and 61% respondents preferred USP pictograms over local pictograms respectively. Thus USP pictograms were preferred over local. This clearly shows that USP pictograms are better understood compared to the local pictograms among all non pharmacy students.

Keywords: Pictograms, pharmaceutical care, compliance, graphic images.

INTRODUCTION

Pictograms are standardized graphic images that help convey medication instruction, precautions and/or warnings to patients and consumers. Pictograms are particularly helpful in passing on important information to patients with a lower level reading ability and patients for whom English is a second language. Pharmaceuticals pictograms have been designed to help people understand how to take their prescription medication. The United States Pharmacopoeia convention defined pharmaceutical pictograms as “standardized graphic images that help to convey medication instructions, precautions and/ or warnings to patients and consumers (USP-DI, 2000). The design and valuation of these pictograms is a complex and multistage process. One of the main strategies to minimize problems in this process is to follow a basic ergonomic principle, which is to identify and involve the target population in all stages of design and evaluation process. The practical application of pictograms in a low- literate population would entail explain the meaning of pictograms to the patient after which the subsequent role of the pictogram is to act as a stimulus to recall that information. The evaluation process should therefore incorporate a follow- up stage to test for the effectiveness of the pictograms in aiding recall of information (Dowse et al. 1998). The pictograms should firstly be tested in healthy participants from the target population to monitor the effects of pictograms on the understanding of and adherence to medicine

For Correspondence
Sachdev Yadav
*Assistant Professor (Pharmacology)
Department of Pharmacy
Banasthali University
Rajasthan 304022, India.
09887886762*

instructions. Given the potentially important role of pictorial symbols in communicating hazards, national and international standards have been established to evaluate their comprehensibility, including the American National Standard Institute (ANSI, 1991), and the organization for International Standardization (ISO, 1984). ANSI and ISO advice that in a comprehension test, symbols must reach a criteria of at least 85% or 67% correct respectively, in order to be considered acceptable.

Pharmaceutical care is a philosophy of practice that is being adopted by many pharmacists world-wide and is described as a practice in which the pharmacist takes responsibility for a patient's drug-related needs and is held accountable for this commitment (Strand et al., 1998). An integral part of this process involves educating and counseling patients in order to prepare and motivate them to adhere to their medication regimens (ASHP, 1997). The quality and form of this information must, however, be appropriate to the patient's level of education and must also take into account his culture, beliefs, attitudes and expectations (Bruce et al., 1998, Doak et al., 1996). Pictograms are considered to be a part of universal language and can be easily recognized by all as they convey their meaning with little or no dependence on language or cultural background. Pictograms may improve warning comprehension for those with visual or literacy difficulties and can sometimes be recognized and recalled far better than words (Dowse et al., 2000). They have the potential to be interpreted more accurately and more quickly than words. It was shown that the preference of pictograms contribute positively to both understanding of instructions and adherence (Dowse et al., 2005). The present study evaluates awareness and understanding of pictogram among non pharmacy students.

SUBJECTS AND METHODS

Study Site and Sample

The study was conducted at Banasthali University, Rajasthan. A total of 140 individuals were selected to participate in the study from different fields of education.

Preparation of Local and USP sets

Forty pictograms were directly taken from the survey performed by World Health Organization (W.H.O.) in South Africa. Out of the 20 pairs of Pictograms selected, one was taken from USP-DI and the other was a locally modified version (culturally sensitive pictograms for conveying medication instructions) of the USP-DI pictogram. The two pictograms conveyed the same instruction pertaining to any medication. This pair of pictogram that conveyed the same instruction was pasted side by side on a Play card and clearly marked for Local and USP.

Collection of test Data during Interviews

A questionnaire to collect data was designed. At the onset respondents were explained about the purpose of the study and invited for the same after taking consent. The demographic details of the respondents like Name, Age, Gender and their Educational Level were collected. It was clearly explained to the respondents

that each play card contained two pictograms, one local and its USP counterpart, both of which convey the same instruction. The respondents were then shown all the 40 pictograms and were asked to give their interpretation of each pictogram by writing in the space provided on the questionnaire. Respondent were also asked to indicate which pictogram of each matched pair was preferred.

RESULTS

By the evaluation of Non Pharmacy students it was clearly found that 61% pictograms were understood and answered correctly by Non Pharmacy Undergraduates and 56% by Non Pharmacy postgraduates. Out of the 140 respondents only one respondent had voted for all the 20 locally prepared pictograms and had preferred absolutely no USP pictogram. Out of total number of respondents in UG non pharmacy students (Figure-1) 53% respondents preferred USP pictograms over local pictograms, also out of total number of respondents in PG non pharmacy students (Figure-3) 61% respondents preferred USP pictograms over local pictograms. Thus USP pictograms were preferred over local. This clearly shows that USP pictograms are better understood compared to the local pictograms among all non pharmacy students.

Table. 1 Data of UG Non Pharmacy Students.

UG NON PHARMACY STUDENTS					
S.NO	Local	USP	Incorrect	Partially Correct	Correct
1	7	13	14	1	5
2	9	11	9		11
3	12	8	6	1	13
4	8	12	14		6
5	13	7	10		10
6	7	13	9	2	9
7	6	14	4	1	15
8	10	10	10	2	8
9	6	14	8		12
10	8	12	6	1	13
11	11	9	12		8
12	11	9	4		16
13	7	13	15		5
14	4	16	5	1	14
15	11	9	3	1	16
16	14	6	9	1	10
17	7	13	6		14
18	14	6	3	1	16
19	9	11	3		17
20	10	10	3		17
21	7	13	4	1	15
22	13	7	10	1	9
23	14	6	9	1	10
24	13	7	10	2	8
25	10	10	8	1	11
26	18	2	3	1	16
27	15	5	3		17
28	14	6	8		12
29	17	3	3	1	16
30	11	9	7	1	12
31	11	9	12	2	6
32	9	11	11		9
33	11	9	13	2	5
34	10	10	7	2	11
35	16	4	4	1	15
36	11	9	8	1	11
37	4	16	4	2	14
38	19	1	1	1	18
39	3	17	11	1	8
40	6	14	10		10
41	8	12	8	2	10
42	8	12	9	2	9
43	12	8	6	1	13
44	9	11	3	1	16
45	10	10	11	1	8
46	7	13	7	2	11

47	10	10	4		16
48	8	12	3		17
49	12	8	9		11
50	12	8	2		18
51	12	8	4		16
52	17	3	12		8
53	7	13	7		13
54	12	8	11		9
55	7	13	11		9
56	15	5	4		16
57	13	7	12		8
58	11	9	9		11
59	15	5	10		10
60	12	8	5		15
61	16	4	10		10
62	8	8	12		8
63	8	12	11		9
64	10	10	6		14
65	11	9	6		14
66	10	10	6		14
67	13	7	6		14
68	10	10	1	1	18
69	11	9	1	1	18
70	11	9	1	1	18
71	11	9	1	1	18
72	13	7	1	1	18
73	10	10	3		17
74	9	11	1	1	18
75	8	12	4		16
76	10	10	4	1	15
77	11	9	5		15
78	10	10	6	1	13
79	9	11	4		16
Avg.	10.53165	9.417722	6.772152	1.25	12.59494

Table. 2 Data of PG Non Pharmacy Students.

PG NON PHARMACY STUDENTS					
S.NO	Local	USP	Incorrect	Partially Correct	Correct
1	9	11	3		17
2	15	5	2		18
3	12	8	4	1	15
4	11	9	10	1	9
5	15	5	2		18
6	15	5	4		16
7	7	13	4	1	15
8	5	15	8		12
9	13	7	1	2	17
10	13	7	6	3	11
11	14	6	5	2	13
12	15	5	10		10
13	9	11	7		13
14	7	13	11	1	8
15	13	7	5	3	12
16	13	7	8	1	11
17	11	9	9	1	10
18	12	8	8	2	10
19	17	3	5		15
20	11	9	9	2	9
21	15	5	12		8
22	8	12	10	1	9
23	9	11	8	2	10
24	14	6	9	1	10
25	8	12	5		15
26	14	6	9	1	10
27	16	4	12	2	6
28	14	6	8		12
29	17	3	9		11
30	15	5	15		5
31	11	9	11		9
32	9	11	5	1	14
33	15	5	7	2	11
34	8	2	6	1	13
35	4	6	4		16
36	5	15	4		16
37	18	2	9		11
38	6	14	3		17
39	20	0	8	2	10
40	15	5	9		11
41	14	6	13		7
42	13	7	10	2	8
43	11	9	5	1	14
44	7	3	12	1	7

45	7	3	5		15
46	11	9	6		14
47	10	10	9	1	10
48	11	9	13	1	6
49	13	7	10	2	8
50	7	13	14		6
51	14	6	7		13
52	17	3	7	1	12
53	15	5	9	2	9
54	14	6	5		15
55	11	9	4		16
56	2	18	9	1	10
57	19	1	11	1	8
58	16	4	8	1	11
59	9	11	10	1	9
60	6	14	7	2	11
61	16	4	9	2	9
Avg.	11.81967	7.52459	7.655738	1.485714286	11.4918

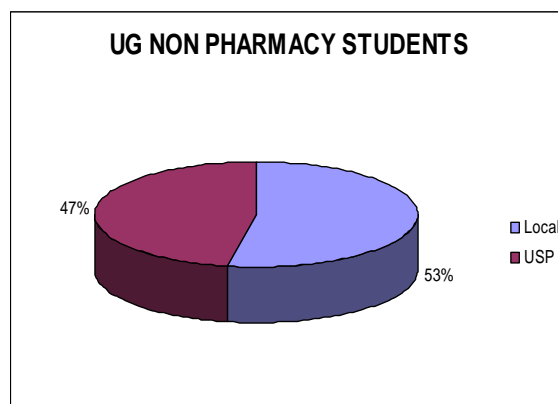


Fig 1 Percentage of Local vs USP Pictogram.

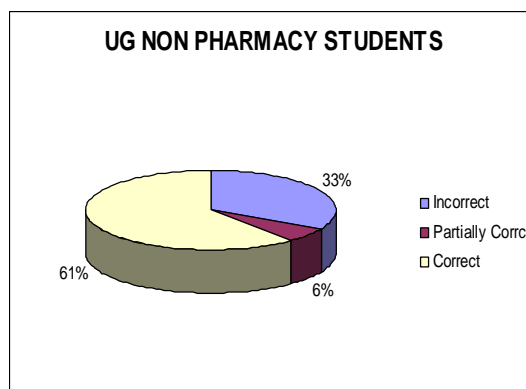


Fig 2 Percentage of Answers.

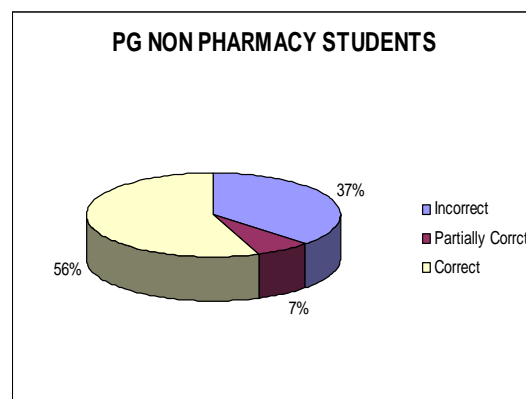


Fig 3 Percentage of Answers.

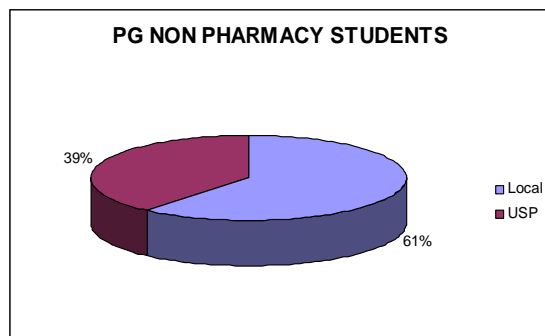


Fig 4 Percentage of Local vs USP Pictogram.

CONCLUSION

Present study suggests and strengthens a belief to introduce pictograms as a topic in curriculum of Non Pharmacy. Mock sessions are further proposed for better understanding and to increase awareness among Non Pharmacy students.

REFERENCES

- American National standard institute: accredited standard in safety colors, signs, symbols, labels and tags. Z 535.1-5. Washington, DC: National electrical mfrs. Association, 1991.
- ASHP guidelines on pharmacist- conducted patient education and counseling. *Am J Health- Syst Pharm.* 1997; 54: 431- 434.
- Bruce OAC. The crucial role of a pharmacist. *Int Pharm J.* 1998; 12: 14- 15.
- Doak CC, Doak LG, Root JH. Teaching patients with low literacy skills, Philadelphia (JB): Lillincott Co. (1996).
- Dowse R, Ehlers MS, Pictograms in Pharmacy. *Int J Pharm Pract.* 1998; 6: 109-18.
- Dowse R., Ehlers MS. Medicine labels incorporating pictograms: do they influence understanding and adherence. *Patient Educ Couns.* 2005; 58: 63-70.
- Dowse R., Ehlers MS. Pictograms for conveying medicine instructions: comprehension in various South African language groups, *S Afr J Sci.* 2000; 100:687-693.
- International Standard for safety colors and safety signs, ISO 3864. Switzerland: ISO, 1984.
- Strand L. Report on the Hoechst Marion Roussell lecture: Building a practice in pharmaceutical care. *Pharm J.* 1998; 260: 874-876.
- United States Pharmacopoeia Dispensing Information, Vol. II, 20th edn. Micromedex, Inc, Eaglewood, NJ (2000) 1617- 1626.