

THE EVALUATION OF KEY VISUAL ELEMENTS OF PICTOGRAMS TO LABEL MEDICATIONS

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INTRODUCTION

- Poor health literacy reduces the ability of individuals to understand the instructions on medication labels¹
- This results in poor adherence to medical regimens & poor health outcomes²
- Pictograms improve understanding and recall of medication instructions in patients with poor literacy³

OBJECTIVE

- To identify the key visual elements of 21 different categories of pictogram instructions used to label medications or supplement counselling information in Patient Information Leaflets
- Design a new set of pictograms which contain all the key visual elements identified

METHOD

- 21 categories of counselling instructions were selected
- Pictograms were searched for all 21 categories: take with water, take with food, take one tablet, take two tablets, take in the morning, take at night, take on an empty stomach, shake the bottle before use, keep out of reach of children, keep in the refrigerator, for rectal use only, for topical use only, do not take with alcohol, do not take if pregnant, do not take if breastfeeding, do take if driving, an inhaler device, an inhaler with a spacer device, ear drops and eye drops
- Common Visual elements in the pictograms were identified
- Working group (WG) of 8 participants completed an online series of questions & qualitative assessment
- Qualitative assessment evaluated the clarity of the pictogram & whether all the visual elements were present in the pictogram required to understand the instruction
- Average percentage of 'yes' responses was calculated for each question in the assessment
- Pictograms which received < 75% were identified as missing the key visual elements
- A set of instructions stating how the new pictogram should be designed was validated by the WG
- A new pictogram was designed for all 10 categories using only the key visual elements

RESULTS

- Total of 188 pictograms were found for all 21 categories
- Following number of pictograms were found for each category: 13 take with water, 13 take with food, 5 take one tablet, 5 take two tablets, 10 take in the morning, 16 take at night, 5 take on an empty stomach, 10 shake the bottle before use, 8 keep out of reach of children, 9 keep in the refrigerator, 5 for rectal use only, 4 for topical use only, 16 do not take with alcohol, 14 do not take if pregnant, 6 do not take if breastfeeding, 10 do not take if driving, 6 an inhaler, 2 an inhaler with a spacer device, 4 for topical use, 14 ear drops and 10 eye drops
- Pictograms found are intended for clinical practice in various countries: Canada, Canada (first nations), US, Japan, Gabon, South Africa, China, Australia (aboriginal community) Europe, & Mexico
- This was a student project being conducted over a short period of time therefore only 10 categories were evaluated
- 108 were retained for the 10 categories: to be taken with water, to be taken with food, keep in the refrigerator, shake the bottle before use, do not take with alcohol, keep out of reach of children, do not take if pregnant, take one tablet, ear drops & eye drops
- 50% (54/108) of pictograms scored less than 75% & 50% (54/108) scored greater than 75%
- Common visual elements missing from these pictograms were using an action to demonstrate the counselling instruction & illustration of medication
- 40% (43/108) were missing the action & 44% (47/108) did not illustrate any medication
- Table 1, 2 & 3 below represent the results collected for 3 categories: take with water, take with food & shake the bottle before use
- Table 4 illustrates the new draft pictograms designed for the remaining 7 categories

Table 1: Take with water



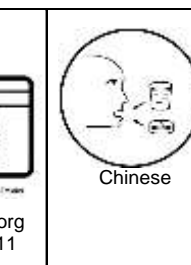
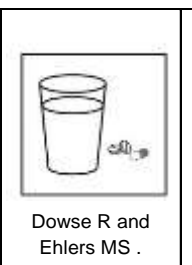






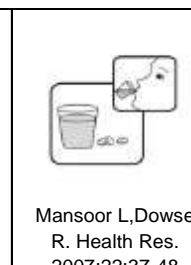

Pictogram													
Clarity of pictogram (%) (N=8)	100	75	63	100	25	0	25	13	75	25	63	0	63
All graphical elements (%) (N=8)	75	50	25	100	50	0	25	0	63	50	0	0	63
Visual element identified (N=13)				Clarity of pictogram or graphical elements scoring > 75% (N=4)				WG global suggestions of the elements missing for pictograms less than 75%					
	No. of pictograms	%	No. of pictograms	%	Medication Action of drinking water Action of taking water Link between taking medication and drinking water								
Face with an open mouth	8	62	4	100									
1 or 2 Glass of water	10	77	4	100									
Medication	6	46	4	100									
Action of drinking water	6	46	4	100									
Action of taking medication	6	46	4	100									
Source of water: tap	1	8											
Black & White	11	85	2	50									
Schematic	1	8											
Square	9	23	3	75									
Visual elements new pictogram should contain				New pictogram									
Schematic Square Black & white Face with an open mouth Tablet Action of drinking water Action of taking medication Link between drinking water & taking medication													

Table 2: Take with food



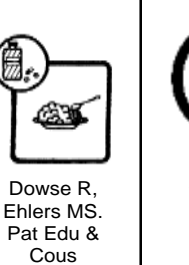
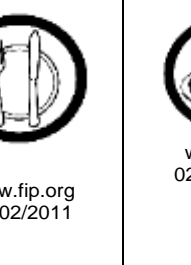


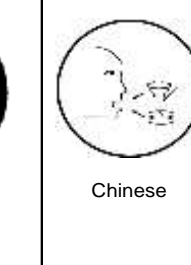
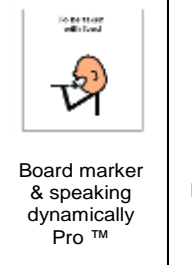


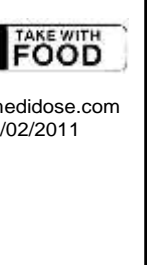

Pictogram												
Clarity of pictogram (%) (N=8)	0	38	50	13	25	13	25	100	50	88	13	63
All graphical elements (%) (N=8)	0	38	50	0	25	13	13	100	13	38	13	88
Visual element identified (N=12)				Elements present in pictograms scoring > 75% (N=3)				WG global suggestions of the elements missing for pictograms scoring < 75%				
	No. of pictograms	%	No. of pictograms	%	Food Action of eating Action of taking medication Link between eating and taking medication							
Face with open mouth	3	38	1	33								
Utensils: fork, knife, spoon, chopsticks	9	70	2	67								
Food: Fish, rice, chicken, salad, sandwich, bread	7	58	3	100								
Food on plate or in bowl	6	60	2	67								
Action of eating food	2	17	1	33								
Medication: tablet or capsules, vial	3	25	2	67								
Action of taking medication	2	17	1	33								
Black & White	10	83	2	67								
Schematic pictogram	9	75	2	67								
Circle pictogram	6	50	1	33								
Visual elements new pictogram should contain				New pictogram								
Schematic, square, black & white Face with an open mouth Plate or bowl Food on plate or in bowl Utensils: fork & knife Tablet Action of eating Action of taking medication Link between eating & taking medication												

Table 3: Shake the bottle before use




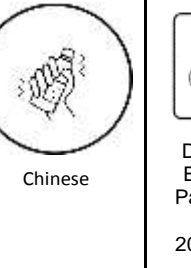




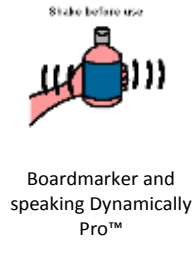


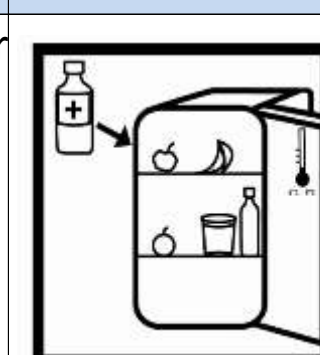
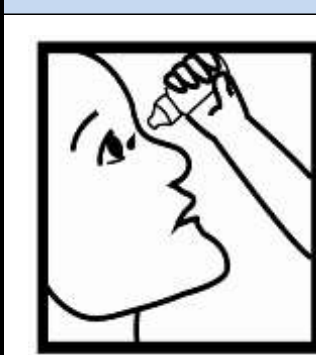


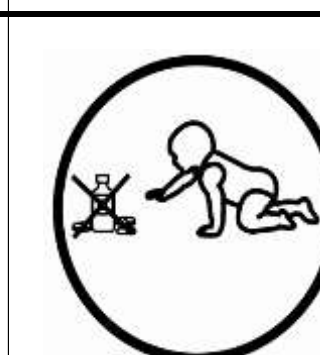
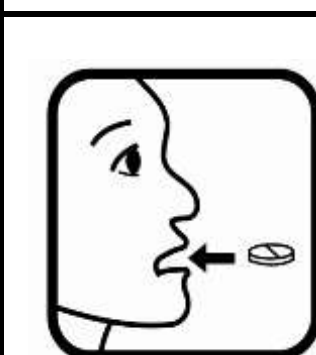
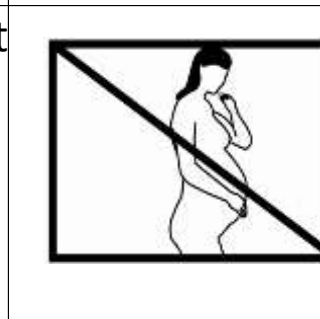
Pictogram											
Clarity of pictogram (%) (N=8)	100	88	13	63	88	88	100	100	100	100	
All graphical elements (%) (N=8)	100	75	13	63	75	75	63	75	75	100	
Visual element identified (N=10)				Clarity of pictogram or graphical elements scoring > 75% (N=8)				WG global suggestions of the elements missing for pictograms scoring < 75%			
	No. of pictograms	%	No. of pictograms	%	Part of hand shaking bottle Clarity of lines used to emphasize shaking of bottle						
Bottle of medication	10	100	8	100							
Action of shaking bottle	10	100	8	100							
Part of hand shaking bottle	9	90	8	100							
Emphasis of shaking bottle	10	100	8	100							
Black & White	5	50	3	38							
Schematic											
Square	5	50	4	50							
Visual elements new pictogram should contain				New pictogram							
Black & White Schematic Square Medication bottle Action of shaking bottle Part of hand shaking bottle Emphasis of shaking bottle											

Table 4: Draft pictograms

Counselling instruction	Draft pictogram	Counselling instruction	Draft pictogram
Keep in the refrigerator		Eye drops	
Do not take with alcohol		Ear drops	
Keep out of reach of children		Take one tablet	
Do not take if pregnant			

DISCUSSION/CONCLUSION

- An action can be used to illustrate a counselling instruction
- The action must clearly relate to the medication illustrated in the pictogram
- Graphical clarity of the pictogram will determine how well it is understood
- When a new pictogram is designed only key visual elements should be incorporated

FUTURE WORK

- Greater number of participants will be recruited in the WG
- Remaining 11 categories will be evaluated using the same process
- Improve the draft pictograms
- A new pictogram will be designed for the remaining categories