

APPLYING CHATGPT-4 TURBO TO ASSESS THE UNDERSTANDABILITY AND ACTIONABILITY OF PHARMACIST-RECOMMENDED DIETARY SUPPLEMENT LABELING

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INTRODUCTION

Over 60% of the U.S. population uses dietary supplements (DSs). DSs are associated with ~20,000 ER visits yearly. The Patient Education Materials Assessment Tool (PEMAT-P) is used to assess understandability and actionability of patient education materials and can be applied to printable pharmaceutical product labels to assess health literacy.

OBJECTIVE

To determine the Understandability and Actionability of DS labels using PEMAT-P scores generated by ChatGPT-4 Turbo, applied to labels of the DS most often recommended by Pharmacists

RESULTS

PEMAT-P Evaluation Summary

Product	Understandability (%)	Actionability (%)
Citracal Gummies	87.5	100
Nature Made Fish Oil (Burp-Less)	81.0	75
Nature Made CoQ10	87.5	100
Osteo Bi-Flex Regular Strength	81.0	75
Nature Made Flaxseed Oil	81.0	75
Nature Made Calm & Relax	87.5	100
Garlique	87.5	100
Emergen-C (Super Orange)	93.75	100
Slow Fe	87.5	100
Nature Made Omega-3 Fish Oil	87.5	100
Centrum Silver Adults 50+	87.5	75
PreserVision AREDS 2	93.75	100
Prevagen Regular Strength	81.25	75
One A Day Prenatal	87.5	100
Mag-Ox 400	93.75	100

METHODOLOGY

The OTC Guide (pictured above), a resource guide that includes Pharmacists' top-rated over-the-counter products, was used to identify 15 categories of DSs. The NIH's Dietary Supplement Label Database was then searched to identify DS labels associated with these products. A screenshot of the DS label was uploaded to ChatGPT-4 Turbo, which is the most advanced version of ChatGPT currently available. ChatGPT-4 Turbo was asked "Can you apply PEMAT-P (pictured above) to this screenshot and score it?" Scores were obtained for the Understandability and Actionability of each label. Note: One label (Mag-Ox 400) was not found in the DS Label Database but was available on Amazon.com

Read the PEMAT User's Guide (available at: <https://www.ahrq.gov/professionals/prevention/chronic-care/improvement/pemat/>) before rating materials.

Item #	Item	Response Options	Rating
1	The material makes its purpose completely evident.	Disagree-0, Agree-1	
2	The material does not include information or content that distracts from its purpose.	Disagree-0, Agree-1	
3	The material uses common, everyday language.	Disagree-0, Agree-1	
4	Medical terms are used only to familiarize audience with the terms. When used, medical terms are defined.	Disagree-0, Agree-1	
5	The material uses the active voice.	Disagree-0, Agree-1	
6	Numbers appearing in the material are clear and easy to understand.	Disagree-0, Agree-1, No number-N/A	
7	The material does not expect the user to perform calculations.	Disagree-0, Agree-1	
8	The material breaks or "chunks" information into short sections.	Disagree-0, Agree-1, Very short material-N/A	
9	The material's sections have informative headers.	Disagree-0, Agree-1, Very short material-N/A	
10	The material presents information in a logical sequence.	Disagree-0, Agree-1	
11	The material provides a summary.	Disagree-0, Agree-1, Very short material-N/A	
12	The material uses visual cues (e.g., arrows, boxes, bullets, bold, larger font, highlighting) to draw attention to key points.	Disagree-0, Agree-1, Video-N/A	

Item #	Item	Response Options	Rating
15	The material uses visual aids whenever they could make content more easily understood (e.g., illustration of healthy portion size).	Disagree-0, Agree-1, No visual aids-N/A	
16	The material's visual aids reinforce rather than distract from the content.	Disagree-0, Agree-1, No visual aids-N/A	
17	The material's visual aids have clear titles or captions.	Disagree-0, Agree-1, No visual aids-N/A	
18	The material uses illustrations and photographs that are clear and uncluttered.	Disagree-0, Agree-1, No visual aids-N/A	
19	The material uses simple tables with short and clear row and column headings.	Disagree-0, Agree-1, No tables-N/A	
Total Points: _____			
Total Possible Points: _____			
Understandability Score (%) = (Total Points / Total Possible Points) x 100			
Understandability Score (%) = _____			
Item #	Item	Response Options	Rating
20	The material clearly identifies at least one action.	Disagree-0, Agree-1	
21	The material addresses the user directly when describing actions.	Disagree-0, Agree-1	
22	The material breaks down any action into manageable, explicit steps.	Disagree-0, Agree-1	
23	The material provides a tangible tool (e.g., menu planners, checklists) whenever it could help the user take action.	Disagree-0, Agree-1	
24	The material provides simple instructions or examples of how to perform calculations.	Disagree-0, Agree-1, No calculations-N/A	
25	The material explains how to use the charts, graphs, tables, or diagrams to take actions.	Disagree-0, Agree-1, No charts, graphs, tables, or diagrams-N/A	
26	The material uses visual aids whenever they could make it easier to act on the instructions.	Disagree-0, Agree-1	
Total Points: _____			
Total Possible Points: _____			
Actionability Score (%) = (Total Points / Total Possible Points) x 100			
Actionability Score (%) = _____			

DISCUSSION

Higher scores on the PEMAT-P indicate that the patient education material is more **understandable** or **actionable**.

When consumers of diverse backgrounds and varying levels of health literacy can:

- process and explain key messages, patient educational material is **understandable**
- identify what they can do based on the information presented, patient education material is **actionable**



RELATED LITERATURE

The 2024 Pharmacy Times OTC Guide can be accessed at https://cdn.sanity.io/files/0vv8moc6/pharmacytimes/ca3b041a2d56c76aa313cabf972db31b5535b402.pdf/2024OTCGuide-Full_Issue.pdf

Shoemaker SJ, Wolf MS, Brach C. The Patient Education Materials Assessment Tool (PEMAT) and User's Guide. (Prepared by Abt Associates, Inc. under Contract No. HHS290200900012I, TO 4). Rockville, MD: Agency for Healthcare Research and Quality; November 2013. AHRQ Publication No. 14-0002-EF. https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.ahrq.gov/sites/default/files/publications/files/pemat_guide.pdf&ved=2ahUKEwicgrSe5u2MAxWSAHkGHWAkJYgQFnoECBgQAQ&usq=AOvVaw3ImNg2vKxOHBtfxL5X7W3

CONCLUSION

- Using ChatGPT-4 Turbo to assess PEMAT-P scores for DS labels of products most recommended by Pharmacists, it was determined that the labels had:
 - a high degree of Understandability ranging from 81-93.75% (difference: 12.75%)
 - a more variable degree of Actionability ranging from 75-100%. (difference: 25%)
- This information provides reassurance that important information is present on DS labels of products most recommended by Pharmacists. Pharmacists can educate about areas that are deficient in the product labeling.
- The most common deficiencies in labeling identified (data not shown) for :
 - Understandability was failure to define medical terms and lack of a summary
 - Actionability was a failure to use visual aids to make action easier
 - Limitations: the abstract was based on an older version of ChatGPT and the PEMAT-P was not scored independently by the investigator
- ChatGTP can be applied to the PEMAT-P to evaluate DS label literacy to enhance health literacy.