Development, Reliability and Validity of the Patient Education Materials Assessment Tool (PEMAT): An Instrument to Assess the Understandability and Actionability of Print and Audiovisual Patient Education Materials

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Background

- Studies show patient education materials are often poorly understood by patients, especially those with limited health literacy.

- There are a myriad of patient education materials from which professionals (e.g., health librarians, clinicians) must choose.

- Some instruments are available to assess materials:
  - Many readability formulas (e.g., SMOG, Lexile)
  - Few instruments to assess comprehensibility (e.g., SAM, SAM-CAM, Health Literacy INDEX)
Background

- While several instruments are available, few assess print and audiovisual (A/V) materials:

- Actionable information has become recognized as an important aim of patient education materials.
  - No instrument assesses actionability.
Aim

- To develop a reliable and valid instrument to assess the understandability and actionability of patient education materials.

  - **Understandability:** Patient education materials are understandable when consumers of diverse backgrounds and varying levels of health literacy can process and explain key messages.

  - **Actionability:** Patient education materials are actionable when consumers of diverse backgrounds and varying levels of health literacy can identify what they can do based on the information presented.
Development Approach

- **Stage 1**: Review existing instruments and guides for assessing and developing materials to identify relevant constructs and construct an item pool.

- **Stage 2**: Assess the face and content validity using experts.

- **Stage 3**: Determine the reliability.

- **Stage 4**: Assess the construct validity by conducting comprehension testing with 47 consumers, and comparing understandability results to readability.
Stage 1: Review Existing Guides

- Identified and reviewed 22 relevant instruments and guides
- Identified 64 potential items, of which:
  - 28 were relevant to understandability
  - 8 items were relevant to actionability
Stage 2: Face/Content Validity

- Nine experts indicated whether a material’s performance on each item would affect its understandability/actionability, discussed results, refined items, and identified gaps.

- We revalidated the items with four experts after developing new items, and refining existing ones.
Stage 3: Reliability

- We conducted four rounds of reliability testing with multiple untrained lay professionals.
- Agreement improved across rounds.
- External consistency of the Final PEMAT:
  - High moderate agreement per Kappa (K=0.57)
  - Strong agreement per Gwet’s AC1 (AC1=0.74)
- Internal consistency was strong:
  - Cronbach’s $\alpha$= 0.71
  - Average Item-Total Correlation=0.62
Stage 4: Construct Validity

- We assessed the construct validity by testing with consumers (n=47).
- Found significant differences between actionable and poorly actionable materials (per the PEMAT) on both consumer testing metrics (76% vs. 63%, $p<0.05$) and (8.9 vs. 7.7, $p<0.05$).
- Did not find differences for understandability except for materials on inhaler on one metric.
- Similarly, found correlation between PEMAT scores and consumer testing results for actionability, but not for understandability.
Stage 4: Construct Validity

- Because the consumer testing results for understandability were limited, we compared results to readability assessments.

- There was a strong, negative correlation between one of the consumer testing metrics and average grade level.

- There was a strong negative correlation between the PEMAT understandability scores and the average grade level for all materials and audiovisual materials, and a very strong negative correlation for printable materials.
Summary

- Patient Education Materials Assessment Tool (PEMAT):
  - Was developed from existing evidence and repeatedly guided and validated by experts
  - Has strong internal consistency
  - Achieved moderate to substantial agreement, comparable to that of existing instruments
  - Used consumer testing to validate the tool; unlike others
  - Demonstrated to be valid from consumer testing (for actionability) and when compared to readability assessments (for understandability)
Summary

- Patient Education Materials Assessment Tool (PEMAT):
  - Does not assess comprehensiveness, clinical accuracy or readability; it can be used in conjunction with readability formulas
  - For both audiovisual and print/printable materials
  - For professionals who are making decisions about which materials to share with patients
    - Does not require formal training to use
  - Does not require information beyond the material itself (e.g., how it was developed)
Final PEMAT Instrument

- Provides an inventory of both desirable and undesirable characteristics of patient education materials.

- Consists of 26 items:
  - Understandability (19 items)
  - Actionability (7 items)

- Most items relevant to both print and A/V materials, but some items are applicable only to one type of material so there are 2 versions of the PEMAT for each type.

- Produces separate numeric scores for understandability and actionability.
Instrument Versions

- PEMAT User’s Guide
  - 60-page User’s Guide on how to use the PEMAT; includes examples and explanation for each item; example of visual aids; guidance on how to rate materials

- PEMAT for printable materials (PEMAT-P)

- PEMAT for audiovisual materials (PEMAT-A/V)

- PEMAT Auto-Calculable Form

Will be available Fall 2013 at:


- To be notified once it is available, please email me
Questions?

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