Applying Tailoring Techniques for the Development of Consumer-focused and Clinician-focused Adult Depression Management Systems

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Introduction

- Depression has been constantly reported as under-diagnosed and under-treated.
- Purpose of this paper:

  To describe the application of tailoring techniques to develop two evidence-based adult depression management systems and to identify the important considerations while utilizing the same principles for system development

  – TIDES: Tailored Interventions for management of DEpression Symptoms
  – MODS-AD: MObile Decision Support for Adult Depression

Methods

- Five Steps Tailoring Process: Kreuter and colleagues [4]

  1) Analyzing the health problem to be addressed and understanding its determinants

  2) Developing the program framework and an assessment tool to measure a person's status on these determinants

  3) Creating tailored messages that address individual variation of determinants of the problem

  4) Developing algorithms and a computer program that link responses from the assessment into specific tailored messages

  5) Implementing the program and evaluation

Results – I

Analyzing the problem and identifying determinants

- TIDES:
  - User: individual consumer
  - System operation: PC/Laptop independently at home/clinic
  - Purposes: enhance independent self-care management
    - assess the level of depressive symptoms
    - Identify individuals at high risk but cannot provide psychiatric diagnoses
    - Provide self-care suggestions
- MODS-AD:
  - User: clinician
  - System operation: PDA at the point of care
  - Purposes: increase depression screening rates and adherence to guideline-based care
    - have control over the final diagnostic decisions and treatment plans
    - based on principles recommended by MODS-AD plus their clinical knowledge and experience

Results - II

- **Developing a program framework & assessment**
- TIDES:
  - Framework: based on the social cognitive theory [2]
  - The initial assessment: CES-D
  - The secondary assessments:
    - Physical activity
    - Type of thoughts
    - Interpersonal relationships
- MODS-AD:
  - Framework: guideline-based [4, 5] and also supported by recent published evidence
  - Two-step screening process: PHQ2 and PHQ9
  - Other considerations:
    - Suicidal ideation
    - Functional impairment

Results - III

- **Creating tailoring messages**
- **TIDES**
  - **Content: readability level 6.0**
  - **Length: 74 messages with an average of 102 words per page**
- **MODS-AD**
  - **Content and length: brief medical and nursing terms**
  - **Some parts provide more detailed information via help buttons**

Results - IV

- **Creating tailoring algorithm & automating the program**
- TIDES:
  - Linear design of TIDES limits the user's activity within the tailoring section
  - No return back to the pre-assessment points
  - Goal setting through the interactive process
- MODS-AD:
  - Flexible multi-layered algorithm
  - Include the critical elements to reflect the real clinical decision making flow
  - Free choices of treatment planning options within the diagnosis section

Results -V

- **Implementing the program and evaluation**
- TIDES
  - PC based
  - Pilot tested with end-users in the usability lab
- MODS-AD
  - PDA based
  - Under evaluation in a randomized control trial

Discussion

- MODS-AD and TIDES are possible solutions for management of adult depression. Reasons include:
  - Through the multiple level assessments, the content of tailoring communication can be highly individualized.
  - It is truly a population approach with a potentially limitless reach for highly individualized communication among large populations.
  - Computer-assisted tailored programs have been shown to be more effective than conventional health communication approaches [6-10].
  - The advances in information technology facilitate the utilization of tailoring information to meet the needs of individuals and health care providers.

Limitations

- TIDES:

  To enhance the regular clinical work, not replace it

- MODS-AD:

  To assist the clinician in the detection and management of depression, not to replace clinical judgment

Conclusion

- Technology allows tailored communication programs to have broad reach and individual specificity, at a relatively low cost.
- Programs with tailored designs seek to identify alternative approaches that might be better suited to that person's needs or abilities and to assist primary care clinicians in achieving better health care quality.

References

1. Kreuter M, Farrell D, Olevitch L, and Brennan L. Tailoring Health Messages. NJ: Lawrence Erlbaum, 2000.
2. Bandura A. Social Learning Theory. NJ: Prentice-Hall, 1977.
3. Randloff LS. The CES-D Scale: a self-report depression scale for research in the general population. Applied Psychological Measurement 1977: 3: 385-401.
4. American Psychiatric Association. Practice guideline for the treatment of patients with major depressive disorder, second edition; APA; 2000 Apr.
5. VHA Performance Measurement System. VHA/DOD guideline for major depressive disorder, 2002; VHA, 2002.
6. Brug J, Steenhaus I, van Assema P, and de Vries H. The impact of computer-tailored nutrition intervention. Prev Med 1996: 25: 236-242.
7. Bull FC, Kreuter MW, and Scharff DP. Effects of tailored, personalized, and general materials on physical activity. Patient Educ Couns 1999: 36: 181-192.
8. Kreuter MK, Vehige E, and McGuire AG. Using computer-tailored calendars to promote childhood immunization. Public Health Rep 1996: 111: 176-178.
9. Skinner CS, Strecher VJ, and Hospers H. Physician recommendations for mammography: do tailored messages make a difference? Am J Public Health 1994: 84: 43-49.
10. Strecher VJ, Shiffman S, and West R. Randomized controlled trial of a web-based computer-tailored smoking cessation program as a supplement to nicotine patch therapy. Addiction 2005: 100: 682-688.

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