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

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Abstract

This abstract describes the utilization of tailoring techniques for the development of evidence-based disease management systems for adult depression. TIDES is a consumer-focused system for self-care management of depressive symptoms. MODS-AD is a PDA system designed for clinicians to support depression screening and treatment planning decisions.

Keywords:

tailoring techniques, adult depression, self-care management

Introduction

With symptoms ranging from mild but chronic to more severe episodes, depression has been constantly reported as under-diagnosed and under-treated. The purpose of this abstract is to describe the application of tailoring techniques to develop two evidence-based adult depression management systems, tailored interventions for management of depression symptoms (TIDES) and mobile decision support for adult depression (MODS-AD), and to identify the important considerations while utilizing the same principles for system development.

Methods

TIDES and MODS-AD focus on different aspects of adult depression management. The development of these two programs has followed to the five steps of the tailoring process that were proposed by Kreuter and colleagues [1].

Results

1. Analyzing the problem and identifying determinants

TIDES is intended to assess the level of depressive symptoms of an individual while using the system independently. It helps to identify individuals at high risk and provide self-care management strategies for depressive symptoms. The program cannot make official psychiatric diagnoses. For MODS-AD, the program is designed to be used at the point of care in the clinical encounter in order to increase depression screening rates and adherence to guideline-based care. Clinicians have control over the final diagnostic decisions and treatment plans based on principles recommended by MODS-AD plus their clinical knowledge and experience.

2. Developing a program framework & assessment

The tailoring framework of TIDES was based on social cognitive theory [2]. The initial CES-D assessment divides TIDES users into three major groups using the cut-off points of 8 and 16 [3]. By comparing the score of the CES-D sub-scales, users with moderate risk are further divided into three groups. The secondary assessments were focused on physical activity, type of thoughts, or interpersonal relationships. On the other hand, MODS-AD is used to assist clinical depression screening and treatment planning. The framework is guideline-based [4, 5] and supported by recent published evidence. The two-step screening process (PHQ2 and PHQ9) is designed to fit into the busy clinical workflow and to avoid response burden of the patients.

3. Creating tailoring messages

The content readability and its length are two major considerations of the message composition for TIDES. In order to decrease the operational difficulties and assist the independent operation, the number of pages was increased. The prototype of TIDES consists of 74 messages with an average of 102 words per page at the readability level of 6.0. Regarding MODS-AD, because the plans of care that result from the tailoring process are designed for use by clinicians and implemented in PDA which has limited space for content presentation, they are composed in brief nursing/medical terms. Some parts provide more detailed information via help buttons.

4. Creating tailoring algorithm & automating the program

The tailoring algorithms reflect the key decision making points in the program. For TIDES, the user path has been tailored through the interactive assessment and goal-setting process. The linear design of TIDES limits the user's activity within the tailoring section. Individuals who may not fit into the purposes of TIDES are excluded at the

beginning of the system usage. The algorithm of MODS-AD includes the critical elements to reflect the clinical decision making flow of generating a depression-related diagnosis. Clinicians can choose the treatment plan options from the section tailored to a specific score on the PHQ9 plus level of functional impairment or suicidality.

5. Implementing the program and evaluation

TIDES is PC based and pilot tested with end-users. MODS-AD is PDA based and is under evaluation in a randomized control trial. The iteration of the program design is necessary to keep the information and tailoring rules updated.

Discussion

The definition of tailoring techniques highlights the two features that set it apart from other commonly used approaches to facilitate health care services. It is assessment-based at the individual level. As a result, the content of its communication can be highly individualized, going beyond risk status to develop personal plans to modify complex health problems by addressing the specific characteristics of an individual. Yet at the same time, it is truly a population approach with a potentially limitless reach for highly individualized communication among large populations.

In a recent series of well-designed studies, computer-assisted tailored programs have been shown to be more effective than conventional health communication approaches in helping some patients quit smoking, maintain balanced diet, increase their level of physical activity, and get mammograms and childhood immunizations [6-10]. The advances in information technology facilitate the utilization of tailoring information to meet the needs of individuals and health care providers. Consequently, the tailoring decision support system for clinicians in primary care settings (MODS-AD) and the tailoring self-care management system for consumers (TIDES) are possible adjunctive solutions for screening and management of adult depression.

However, although the assessment-feedback structure of tailoring programs makes them somewhat interactive, they don't come close to approximating the interactivity, intimacy, and immediacy of interpersonal communication. Tailoring communication programs such as TIDES should be viewed as complementary to the clinic encounters – a potentially powerful tool to enhance their work, not replace it. Similarly, MODS-AD was developed to assist the clinician in the detection and management of depression, not to replace clinical judgment.

Conclusion

In the area of mental health management, clinician encounters are usually the preferred service for improving health-related behaviors, due to the interpersonal contact, interactivity, and immediate feedback that can be provided with one-on-one counseling. However, the impact of such counseling on the health of populations is limited by cost and the relatively small number of individuals who can be reached by an even smaller number of trained professionals. Technology allows tailored communication programs to have broad reach and individual specificity, at a relatively low cost. As strategies for addressing low screening and treatment rates for depression, 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.

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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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