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Patients' Mental Models and Adherence to Outpatient Physical Therapy Home Exercise Programs

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Abstract: Non-adherence to medical advice leads to costly physical and financial repercussions. Previous research suggests individuals' mental models, comprising knowledge, beliefs, and prior experiences, may influence adherence behavior. This study explores these relationships by linking aspects of physical therapy patients' mental models with their adherence to home exercise programs.

Background

Adherence refers to both the adoption and maintenance of a specific behavior. Non-adherence to medical self-care recommendations can lead to progressive declines in individual health, lost time from work, and rises in health care costs. Financial costs in the United States associated with non-adherence are estimated to be 300 billion per year. In general, 50% of individuals prescribed medical routines to perform at home do not adhere to recommendations. Specifically, non-adherence to home exercise programs prescribed by physical therapists parallels general medical non-adherence rates.

In studies across a variety of medical services, including physical therapy, researchers have identified over 200 factors related to non-adherence to medical advice (Vermeire et al., 2001). In their meta-analysis of medical adherence literature, Vermeire et al. (2001) concluded that methodological quality was poor in many studies and many lacked any theoretical framework to guide their empirical efforts. Vermeire et al. posited that the most salient factors impacting adherence were reflective of individuals' knowledge, beliefs, and prior experiences regarding illness and medications. Despite this recommendation, only a few authors have included prior experience and prior adherence behavior in their study designs.

We designed our study addressing the problem of patients' non-adherence to physical therapy home exercise programs using a mixed-methods approach to uncover how individuals' mental models (i.e., their knowledge, beliefs, and prior experiences) related to their adherence behaviors.

Conceptual Framework

The conceptual framework for this study included theoretical and empirical research that guides understanding about how adults learn from prior experience and how learning relates to behavioral change. Specifically, research on analogical reasoning (Gentner, 2002) indicates that adults make meaning of current experiences by comparing and contrasting salient features of new experiences to features of past experiences. Analogical reasoning results in the formation of mental models by virtue of an accumulation of beliefs, values, expectations, and assumptions based on previous domain-specific experiences. Gentner (2002) contends that mental models represent a foundation for why individuals hold certain values and beliefs, making them pivotal for everyday reasoning and decision-making. Therefore, patients' mental models of their medical condition, physical therapy, and adherence itself may influence their behaviors in adhering to home exercise programs.

Researchers have demonstrated the link between context-specific mental models and decision-making. In a qualitative study ($N=10$), Eckert and Bell (2005) demonstrated that over time farmers developed tacit mental models of farming unique to each farmer. The authors showed that individual mental models actually trumped expert advice when making farming decisions. In a quantitative study by McNeil, Pauker,

Sox, and Tversky (1982), participants ($N = 1153$) relied more on pre-existing beliefs (a component of their mental models) rather than present day statistical information when faced with a hypothetical medical decision.

Study Methods

The specific research questions addressed by this study were: (a) *What aspects of individuals' mental models relate to adherence to physical therapy home exercise programs?* and (b) *In what ways and to what extent can aspects of individuals' mental models of adherence to PT home exercise programs be quantified into a survey?* The researchers used a mixed methods design to first collect qualitative data via two face-to-face semi-structured interviews from patients ($n = 10$) prescribed a physical therapy home exercise program (Phase 1). The intent of Interview 1 was to describe past experiences, possibly unrelated to physical therapy, which required the participant to engage in some form of adherence via repeated attention and change in lifestyle. Interview 2 focused on participants' current experiences related to adherence to their physical therapy home exercise program, including their perceptions of how the experiences compare to prior experiences, outcome expectations, and adherence behaviors. In Phase 2, results of the qualitative data analysis will be used to develop and validate a quantitative survey, the Mental Model of Exercise Adherence Survey (MMEAS). The authors' intention for the MMEAS is to provide a tool for physical therapists and other health care providers to become more aware of individual factors that may impact patient adherence and to aid in the design of supports that increase the likelihood of adherence.

Purpose of Roundtable

The purpose of this roundtable is to share preliminary themes from Phase I of the study, and to engage participants in a discussion of the outcomes, ideas, and applicability of the methods and findings to different adult education and patient care settings.

This roundtable targets professionals in adult learning and health care, particularly those who seek to better understand the role of prior experience and cognitive mental models in behavior change and decision-making.

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