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Special Article

Strategies to Enhance Patient Adherence: Making It Simple

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Abstract and Introduction

Abstract

The problem of poor patient adherence has been extensively researched, but the rates of nonadherence have not changed much in the past 3 decades. Healthcare providers play a unique and important role in assisting patients' healthy behavior changes. We conducted a narrative review of the current literature to help providers become more familiar with proven interventions that can enhance patient adherence. We then grouped the interventions into categories that can be remembered by the mnemonic "SIMPLE":

1. Simplifying regimen characteristics;
2. Imparting knowledge;
3. Modifying patient beliefs;
4. Patient communication;
5. Leaving the bias; and
6. Evaluating adherence.

Chronic lifestyle behavior change often requires a combination of all the aforementioned strategies. We suggest a conceptual framework, which calls for a multidisciplinary approach with the above strategies in the context of a healthcare team and system-related factors. We hope that this framework would not only help design scientifically proven interventions, but also reduce the time and cost involved with implementing these strategies in a healthcare setting.

Introduction

The problem of poor adherence to medical treatment is a well-recognized problem in the literature.^[1-4] Studies have shown that in the United States alone, nonadherence to medications causes 125,000 deaths annually and accounts for 10% to 25% of hospital and nursing home admissions.^[5] This makes nonadherence to medications one of the largest and most expensive disease categories. Moreover, patient nonadherence is not limited to medications alone. It can also take many other forms; these include the failure to keep appointments, to follow recommended dietary or other lifestyle changes, and to follow other aspects of treatment or recommended preventive health practices. Hence, the actual implications of nonadherence go far beyond the financial aspect of medication nonadherence, as estimated above.

Over the last few years, various constructs of adherence have been conceptualized, and extensive research on the efficacy of adherence-enhancing strategies has been performed. One significant development has been the inclusion of the patient in the determination and success of therapy, with the term "adherence" seeming to indicate this action more accurately than "compliance."^[6] However, the rates of nonadherence have not changed much over the past 3 decades. Recent reviews have shown that as many as 40% of patients still do not adhere to their treatment regimens.^[7,8]

One possible reason could be the lack of consensus guidelines on this issue. Many of the studies and reviews done have been narrowly focused on one disease condition or one kind of adherence-enhancing strategy. Although this may be useful in a research setting, this fragmented approach may not be practical for healthcare providers dealing with a diverse patient population.^[9] In addition, most of the literature on patient adherence has been published in social science journals rather than in the medical literature. This study provides a current review of critical adherence-enhancing

interventions across a broad spectrum of patients and diseases and suggests an integrated framework to facilitate their implementation in clinical settings.

Methods

We identified original studies by searching MEDLINE (1990-2002) through Ovid with the MeSH headings "patient compliance" or "treatment refusal" and at least one of the following keywords: "intervention studies," "prospective studies," "outcome assessment," "patient education," "health promotion," and "patient dropouts." Bibliographies of relevant articles were searched to identify studies that might have been missed in the review.

Results

The individual studies were too clinically heterogeneous and methodologically variable to justify a quantitative meta-analysis. Hence, we chose to do a qualitative synthesis and group the studies into 6 broad categories on the basis of the type of intervention used to address nonadherence (see [Table](#)). This broader focus emphasizes certain common strategies that need to be addressed with respect to all patient-related conditions regardless of their causes.^[10] The categories that are described below can be remembered by the mnemonic "SIMPLE."

Simplifying Regimen Characteristics

We have known for some time that the complexity of a treatment regimen can affect adherence. Many of the strategies used to simplify a regimen have already become well-standardized practices. For example, adherence improves remarkably when a patient is prescribed a pill that can be taken once a day.^[11] This can be done with a longer acting drug (wherever possible) or with a pill that has more than 1 drug. When a drug regimen cannot be reduced in frequency, it should be matched to the patient's activities of daily living. For example, patients are more likely to remember to take a pill before a meal or before going to sleep. Or, the regimen can be broken down into less complex stages that can be introduced sequentially. However, it is important to note that patients often misinterpret common instructions. Eraker and colleagues,^[12] for example, found that only 36% of patients correctly interpreted the meaning of "every 6 hours." Thus, it is important for physicians to use simple, everyday language and have the patient repeat the instructions to ensure proper understanding. Elderly patients are a particular concern because of their common deficits in physical dexterity, cognitive skills and memory, and the number of medications that they are typically prescribed. A variety of adherence aids are available to help patients organize their medications (eg, medication boxes) and remember dose times (alarms). Microelectronic devices can provide feedback that shows patients whether they have been taking their medications as prescribed.^[13] Patients can also use devices designed to improve physical dexterity when applying topical preparations, administering insulin injections, operating pressurized inhalers, and administering eye drops. Such devices can help them place drops into their eyes or obviate the need to squeeze an eye drop container.^[14]

Imparting Appropriate Knowledge

Research has consistently demonstrated that patients' understanding of their conditions and treatments is positively related to adherence,^[15] and that adherence, satisfaction, recall, and understanding are all related to the amount and type of information given.^[16]

Many studies have shown that patients do not always understand prescription instructions and often forget considerable portions of what healthcare practitioners tell them.^[17,18] Studies have shown that patients who understand the purpose of the prescription are twice more likely to fill it than those who do not understand the purpose.^[19]

According to Katz,^[20] physicians can provide effective patient education by (1) limiting instructions to 3 or 4 major points during each discussion; (2) using simple, everyday language, especially when explaining diagnosis and giving instructions; (3) supplementing oral teaching with written materials; (4) involving the patient's family members and friends; and (5) reinforcing the concepts discussed.^[20] This is especially true for millions of citizens with low literacy skills.

Modifying Beliefs and Human Behavior

For interventions that are complex and require lifestyle modifications, it is worthwhile to address patients' beliefs, intentions, and self-efficacy (perceived ability to perform action). This is because knowledge alone is not sufficient to enhance adherence in recommendations involving complex behavior change.^[21,22,23]

Clinicians can optimize behavior change by ensuring that the patients (1) perceive themselves to be at risk due to lack of

adoption of healthy behavior (perceived susceptibility), (2) perceive their medical conditions to be serious (perceived severity), (3) believe in the positive effects of the suggested treatment (perceived benefits), (4) have channels to address their fears and concerns (perceived barriers), and (5) perceive themselves as having the requisite skills to perform the healthy behavior (self-efficacy).

Thus, by knowing which of these beliefs is below a level presumed necessary for good adherence, the provider may tailor interventions to suit the unique needs of each patient.^[24]

Patient Communication

Patient communication encompasses interventions ranging from physician-patient communication, sending mail or telephonic reminders, to involving patients' families in the dialogue. Of these, the most problematic is physician-patient communication. At least 50% of patients leave their doctors' offices not knowing what they have been told. Studies have shown that (1) 50% of psychosocial and psychiatric problems are missed by physicians due to lack of proper communication^[25]; (2) physicians interrupt patients on an average of 18 seconds into the patients' descriptions of the presenting problems^[26]; (3) 54% of patients' problems and 45% of patient concerns are neither elicited by the physician nor disclosed by the patient^[27]; and (4) 71% of patients stated poor relationships as a reason for their malpractice claims.^[28]

Rosenberg and associates^[29] devised the following suggestions after conducting a comprehensive review of the existing physician-patient communication literature in books and articles:

Ask a patient about his feelings and concerns (in addition to physical aspects of the problem) and his view about psychological factors on the adherence, so as to arrive at a common understanding to the nature of the problem. Then provide them with information about all areas that [that] individual finds pertinent, and encourage them to share in decision making when a plan for management is formulated.

Most importantly, successful collaboration requires tailoring strategies to individual patients rather than basing communication on general assumptions.^[30]

On the same note, communication with the patient's family and the patient's own perception of social support are significantly and positively related to adherence.^[31-33] The family's role becomes all the more important if a patient is suffering from a chronic disabling condition requiring continued support and understanding.

Leaving the Bias

Much of the early literature in adherence research focused on demographic factors and personality traits that supposedly caused or led to poor adherence. In a review of 185 studies, Haynes^[34] found no clear relationship between adherence and race, sex, educational experience, intelligence, marital status, occupational status, income, and ethnic or cultural background. Although some studies have found a correlation of adherence with sex and education,^[35] it is believed that this effect is small and may be overcome by tailoring the education to the patient's level of understanding. Moreover, the fact that an individual's level of adherence may vary over time and between different aspects of treatment proves that demographic factors play a minor role in adherence behavior, if at all.^[36,37]

Evaluating Adherence

Of note, doctors uniformly underestimate the problem of nonadherence in their patients.^[38,39] If a healthcare professional is unable to detect nonadherence, it is impossible for him or her to correct the problem. Hence, it becomes imperative to measure and evaluate patient adherence reliably. This can be done by self-reports, pill counting, and in some cases measuring serum or urine drug levels. Of these, self-report is the most practical and widely used tool. In general, patients can be very accurate in reporting whether they are adhering to their treatment regimens if they are asked simply and directly.^[40] Moreover, regular assessment of patient adherence by itself can lead to increased patient adherence.^[29]

A simple, 4-item questionnaire designed by Morisky and colleagues^[41] was effective in assessing and predicting adherence in 290 hypertensive patients who had been receiving care for their high blood pressure for 6 years.

The questions asked were:

- Do you ever forget to take your medications?

- Are you careless at times about taking medications?
- When you feel better, do you sometimes stop taking medications?
- Sometimes, when you feel worse, do you stop taking your medicine?

Each yes answer was scored with a 0 and each no answer was scored with a 1. The reliability of the scale was found to be .61 with a sensitivity of .81 and specificity of .44.

A Conceptual Framework to Address Patient Nonadherence

The aforementioned strategies have been proven to enhance patient adherence in multiple studies and can have huge implications for cost-savings and improved patient outcomes.^[42] The average unweighted effect size for such interventions has been calculated to be around .23.^[21] In terms of binomial effect-size display, this difference of 23% may be interpreted as a "success rate" of 62% in intervention subjects vs 38% in control subjects. Although these results are encouraging, the challenge still remains over how to implement and operationalize these strategies in a modern-day busy practice where clinicians are constrained by limited time and budget. To compound this problem, there is no single intervention strategy that has been shown to be effective across all conditions and settings, and hence a combination of the above strategies is often required to make a meaningful difference to patients' adherence^[21,43] (see [Table](#)). To bridge this gap between research and clinical reality, we propose a conceptual framework based on our literature review and the recommendations adopted by some of the leading organizations.^[8,44,45] This framework is based on a multidisciplinary approach, which looks at the strategies in the context of healthcare team and system-related factors to help reduce the time and cost involved with implementing these strategies (see Figure). The framework considers patient adherence not as a patient or physician issue but as a systems problem and helps integrate the strategies at the systems level. In the framework nurses, pharmacists, case managers, health educators, and others involved in patient care are aware of one another's responsibilities and have an important role to play. For example, understanding and accepting the role that a pharmacist plays in imparting medication-related knowledge to patients may help clinicians to focus on other aspects of the treatment plan. The community pharmacist can help increase adherence to drug regimens by providing patients with additional information about individual drugs, identifying potential adverse drug reactions and interactions, and supplying appropriate drug containers or compliance aids.^[46] Similarly, interventions, such as mailing appointment reminders and patient-education materials, may be accomplished by nurses or other healthcare staff. The framework also implies that adherence is a dynamic process that needs to be extensively evaluated. Closing the feedback loop relies on good evaluation, which in turn entails defining specific criteria to measure adherence as well as assessing both the processes and outcomes of an initiative. Developing institutional-wide committees to plan and operationalize the strategies would help incorporate the guidelines smoothly into the existing systems and make them a part of continuous quality-improvement initiatives.

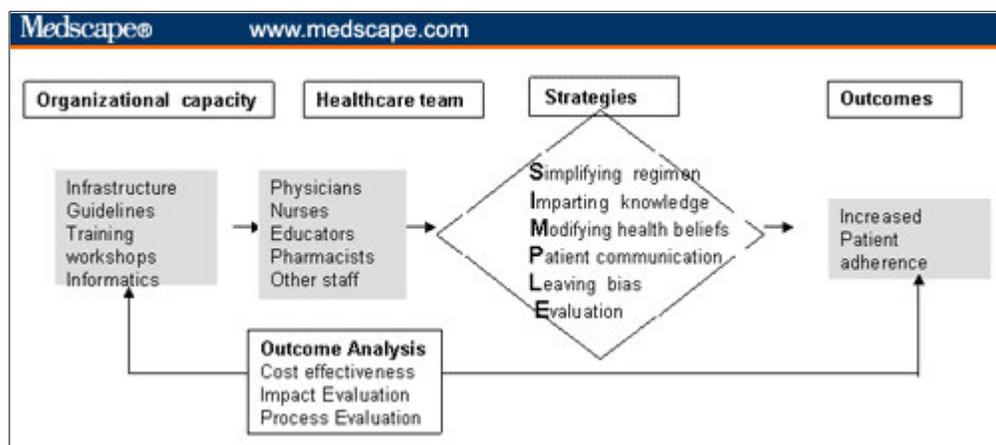


Figure. Framework to implement critical adherence-enhancing strategies with a systems approach.

Conclusion

Patient adherence is a complex issue leading to huge burden on our healthcare system. Although strategies to enhance patient adherence exist in the literature, they are often too complex and not practicable for busy practicing physicians. We have provided a simplistic overview of methodologically proven adherence-enhancing strategies so that the research can be translated and applied to patient care settings. Involving multiple stakeholders and other healthcare providers, in addition to physicians, may help reduce the time and cost involved with implementing these strategies.

Table. Some Commonly Used Interventions in Successful Adherence-Enhancing Strategies

Strategies	Specific Interventions
Simplifying regimen characteristics	Adjusting timing, frequency, amount, and dosage Matching to patients' activities of daily living Using adherence aids, such as medication boxes and alarms
Imparting knowledge	Discussion with physician, nurse, or pharmacist Distribution of written information or pamphlets Accessing health-education information on the Web
Modifying patient beliefs	Assessing perceived susceptibility, severity, benefit, and barriers Rewarding, tailoring, and contingency contracting
Patient and family communication	Active listening and providing clear, direct messages Including patients in decisions Sending reminders via mail, email, or telephone Convenience of care, scheduled appointment Home visits, family support, counseling
Leaving the bias	Tailoring the education to patients' level of understanding
Evaluating adherence	Self-reports (most commonly used) Pill counting, measuring serum or urine drug levels

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