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RESEARCH ARTICLE

Patient Compliance: A Key Element in the Success or Failure of Treatment

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ABSTRACT

The success of a physician-prescribed medication treatment depends largely on patient compliance. Indeed, patient compliance with a medication regime is particularly crucial for chronic disease treatment. The failure of a personal medication protocol often results not from physician misdiagnosis or mistreatment, but from errors and omissions in patient application. This review article discusses patient compliance as a key determinant of treatment success in a broad array of chronic diseases in ranging medical domains: internal diseases, dermatology, orthopedics, endocrinology, dentistry, ophthalmology and others. The review takes a holistic approach in an attempt to reveal the psychological elements that influence patient non-compliance overall in medicine and not specifically in any given domain. Understanding the role of patient compliance in treatment success is crucial, as such compliance is a key parameter in the ability of medication to cure.

Introduction

Patients' noncompliance is regarded as a major problem in health care. A corpus of literature spanning decades has covered the subject, with no consensual prescriptive conclusions that can be applied blankly for better patient-physician cooperation. Multiple factors have been found to impact patient compliance with a medication regime, including patients' cultural background, personal education, intelligence level and psychological background.¹ Complicating the matter of compliance is the fact that each disease has its specific treatment protocol and particular approach.^{2,3} The present review provides a brief holistic overview of the patient compliance literature in a broad range of medical fields, given that the commonality of this problem across medical domains. The aim of this review is to provide a brief discussion of this issue as it manifests throughout various differing medical fields—internal medicine, surgery, orthopedics, dentistry, ophthalmology, dermatology, asthma—thereby revealing the different manifestations alongside the common trends and impacts of this phenomenon.

1. Diabetes

Millions of new cases of diabetes mellitus are diagnosed annually worldwide. The World Health Organization (WHO) presents this disease as a continuous progressive one and the leading factor of blindness in the world.

Adherence to medication, physical activity (PA) and diet in diabetes mellitus (DM) patients is crucial for disease management, so as to avoid acute and chronic complications. A cross-sectional study of older patients (>65 years old) with DM was carried out in the Outpatient Department of Internal Medicine Service of CHUJ-Porto, Portugal. Those unable to communicate were excluded. Cognition (mini-mental state examination), anxiety, and depression (hospital anxiety and depression scale) were assessed. Adherence to medications, PA and diet were measured, based on patient/family self-reporting, questionnaires, physician clinical opinions, hemoglobin tests, and pharmacy records. The study concluded that higher anxiety and depression were associated with non-adherence to medication and to PA. Insulin prescribed and high anxiety score were predictors of medication non-adherence. Hence, given the key role of compliance in the management of DM, the authors concluded that the evaluation of the cognitive level of a diabetic patient (as indicative of compliance ability) is crucial to the success of the given treatment.^{4,5}

Additionally, a study applying a descriptive cross-sectional research design was carried out at the Tribhuvan University Teaching Hospital. This study aimed to identify the predictors of treatment regimen compliance and glycemic control among diabetic patients. Data was collected through interviews applying a structured questionnaire and purposive sampling among 422 respondents attending a medical outpatient department (OPD). Findings revealed varying protocol compliance amongst patients: 20.9% of respondents had good, 53.6% had fair and 25.5% had poor treatment compliance. The researchers concluded that diabetic patients attending diabetic counseling who have proper understanding of the treatment protocol and good compliance over time demonstrated improved glycemic control.⁶

Another study was specially designed to test outcomes of a patient education program in terms of diabetes-related knowledge and treatment compliance of insulin-dependent diabetic patients. The program consisted of an audio-visual presentation, illustrated handout material, and pharmacist patient counseling. Based on statistical considerations, 65 eligible patients were assigned systematically to a control group and a study group, and were evaluated for compliance following a standardized protocol. Study group patients were instructed utilizing the patient education program. Scores for initial and final evaluation were compared between the two groups. Notably, the program was successful in producing improvement in treatment compliance and health scores in both groups. However, the improvement was lesser in patients older than the mean age and those with diabetes complicated by cardiovascular and hypertensive disease.^{7,8}

Adolescence is known as a high-risk period, and in patients with type 1 diabetes, glycemic control is at its worst during this life stage. Thus, of note is a highlight review article by Jennifer Raymond covering research in the behavioral and psychosocial literature focused on type 1 diabetes in adolescents, including compliance with standards of care, quality of life, depression, psychological burden of type 1 diabetes, parental involvement, the parent-child relationship, self-management, socioeconomic status, and transition and transfer of care. The conclusion of the screening of the literature is that behavioral and psychological issues in adolescence type 1 diabetes greatly impact patients' diabetes and general life outcomes. The author concludes that additional research—specifically, interventions successfully addressing the behavioral and psychological issues in this population—is desperately needed.⁹

2. Modern Communication Technologies and medication adherence

Numerous mobile health (mHealth) interventions are being developed to aid in management of complex chronic medical conditions. A study amongst resource-poor, inner-city patients with diabetes sought to evaluate the acceptance of such a tool within this population. The study was conducted as a prospective proof-of-concept trial to assess satisfaction and preliminary effectiveness of the TExTMED program. This pilot trial of the TExT-MED program demonstrated increased healthy behaviors, improved diabetes self-efficacy and medication adherence, and received excellent satisfaction scores in the target population.⁷

An additional systematic study aimed to determine the extent to which patients comply with triage advice from telenurses and to identify factors that potentially influence compliance. Findings from 13 studies (spanning from 1990 to 2020) identified through an interdisciplinary research database were meta-analyzed. Three types of services were analyzed for compliance rates: emergency services and office care (13 outcomes), emergency services and self-care (13 outcomes), and self-care and office care (12 outcomes). Overall patient compliance was 62%. Reasons for noncompliance include patients reporting to have received different medical advice, patients' intensions and health beliefs. The study authors highlight the need for communication-skills training in a telephone-consultation context that is patient centered. The training should specifically address building active listening and active advising skills to boost the compliance likely to result from the nurses' call.^{10,11} Non adherence to physician's indications of treatment happens even in preoperative day of surgery. This fact was reported by a group of anesthesiologists.¹²

3. Dentistry

A detailed article regarding the compliance of patients with oral hygiene and its maintenance revealed that compliance tends to be poor in patients who have chronic diseases that they perceive as nonthreatening. Indeed, the study revealed that the highest compliance rate ever achieved in tooth brushing was 50%! Patients in university-based programs were found to have a dropout rate (noncompliance) of 11% to 45%. Many reasons were identified for the failure to comply amongst dentistry patients: self-destructive behavior, fear, health beliefs, economic factors, and stressful life events. However, the authors concluded that recognition of the compliance problem can lead to improvement in most patients.

¹⁴

Periodontal care in particular necessitates excellent patient compliance, particularly in long-term therapy. However, a study found self-reported compliance as low as 16%. The factors accounting for this dismal rate are social, behavioral, economic and cultural. Additionally, the authors recommended that the influence of personality characteristics on attitudes be carefully explored and accounted for.¹⁵

4. Asthma

Self-management protocols and home peak rate monitoring are tools used to improve asthma care. In a study of compliance with patients' record keeping, participants received an extensive educational program in self-management of asthma teaching them to use written protocols for record-keeping. Yet despite this intervention, compliance with the recommended treatment was only 40%. Electronic monitoring of peak expiratory flow and inhaler usage can provide early identification of patients who do not comply.^{16,17}

5. Venous Thromboembolism Prophylaxis

Venous thromboembolic events (VTE) occurring in the postoperative period are serious yet preventable conditions. Studies regarding this phenomenon revealed that the risk of postoperative VTE can be successfully reduced with mechanical prophylaxis/or chemoprophylaxis. Patients are often noncompliant with the mechanical prevention method. A prospective non-randomized controlled study aimed to determine if providing an educational pamphlet would increase knowledge and compliance with the mechanical prevention protocol. Indeed, knowledge and compliance was found to be greater in the group educated by the pamphlet than in a non-educated control group (73.1% vs. 30.2% and 53.9% vs. 30.2% for knowledge and compliance, respectively). This finding supports the conclusion that patient education improves compliance.¹⁸

6. Ophthalmology Dry Eye Disease

Dry Eye Disease (DED) is a common and well-known condition that was aggravated by the modern lifestyle, wherein people spend many hours working on screens of electronic devices. DED has even been spread to children by their parents. Today, millions of adults worldwide need chronic treatment with artificial tears to avoid the unpleasant symptoms of dry eye condition. Moreover, older women above the age of 60 are also likely to develop dry eye due to a

physiological decline in hormones affecting the eyes. A study aimed to investigate the use of eye drops for DED, the reasons for eye-drop instillation behavior, and the relationship between instillation behavior and subjective symptoms. In total, 2,645 participants were enrolled. The proportion of participants who instilled at the frequency specified on the package insert was 10.2%. The most common reason for not instilling at the prescribed frequency was patient preference to instill as needed instillation to alleviate subjective symptoms (rather than to follow recommendations), and 61.3% of participants instilled only when feeling symptoms.

In conclusion, most participants did not instill the eye drops for DED at the specified frequency to help permanently alleviate the symptoms. Seemingly, the users did not receive the needed information from the eye doctor and missed out on using the drops for prevention. This study concludes that physicians should provide patients with better information on how to use the prescribed medication even when not experiencing symptoms.¹⁹

Glaucoma medication adherence

Glaucoma is a chronic life-long disease. In certain cases, patients might need to make use of three medications to keep their intra-ocular pressure at the advisable level.

A multi-center prospective, cross-sectional survey explored patient adherence to their glaucoma medication regime. Participants (N=190) were adults with glaucoma taking one or more glaucoma medication. The participants received care at glaucoma clinics at two different clinics in different cities. The participants completed a survey on demographic and disease characteristics, barriers to optimal glaucoma medication adherence, interest in an eye-drop aid, and self-reported adherence (measured by the Morisky Adherence Scale).

The study found that 27% of the sample reported poor adherence. Of all participants, 61% cited multiple barriers and 10% cited a single barrier as impediments to optimal adherence. Of the 11 total barriers cited by participants, the following were the most cited (in order of major citation): decreased self-efficacy, difficulty in instilling drops, forgetfulness, and difficulties with the medication schedule.²⁰

7. Orthopedics

Studies on radius ulna shaft fractures reveal importance of the patient awareness regarding their participation in the care for forearm fracture, stressing the importance of follow-up with the

surgeon and of patient compliance in nonunion of forearm fracture prevention. Findings reveal that various types of complications following the plating of the fracture can be avoided if patients comply with the full treatment regime. Indeed, a 25% complication rate is reported in patients treated with plate fixation, making compliance all the more critical. The presence of comorbidities and the socio-economic status of patient were found to be important factors in fracture healing, once again indicating the need to improve patient awareness and compliance.²¹

8. Rheumatoid Arthritis

Rheumatoid arthritis (RA) is an autoimmune inflammatory disease which results in extensive articular and extra-articular morbidity and increased mortality from cardiovascular disease. Despite an increasing range of non-biological disease modifying agents, poor patient adherence with medication is a significant obstacle to effective control of this chronic disease.^{22,23}

9. Dermatology

Dermatology is a domain that has been largely under-studied in regard to patient adherence to treatment. Adherence to topical therapy among dermatology patients is difficult to measure reliably. A small number of studies using new electronic monitoring technology have shown that dermatology patients have low adherence rates to treatment regimens. There are socioeconomic, cognitive, and psychological factors that contribute to non-adherence among patients. As with the other medical fields surveyed above, improving patient knowledge and the doctor-patient adherence can improve patient outcome in dermatology as well.²⁴

10. Conclusion

Despite evidence indicating therapeutic benefit for adhering to a prescribed regimen, many patients do not take their medications prescribed. Studies conducted on patient medication adherence consistently revealed that patient characteristics—including education, culture, socio-economic status, and age—influence patient compliance with prescribed medical treatment. Medication adherence amongst patients with one condition was found to be higher in males, Caucasians, older patients, and those living in areas with higher education rates and higher income. In the overall population, adherence increased with lower comorbidity and increased number of medications. Substantial variation in adherence was found by condition, with the lowest adherence for diabetes (51%) and asthma (33%). Expectation of higher

adherence amongst those with a covered pharmaceutical benefit or enhanced medication access did not hold.^{25,26}

Notably, information provided by the physician regarding the treatment protocol is an important factor for the optimal adherence of the patients. Such information must be transmitted to the patient using a variety of methods, such as providing informational fliers describing the goal of the medication, protocol of use and potential aversive side effects; or referring patients to online guides. The present review reveals a broad picture of aspects regarding patient adherence and non-adherence to their medication care protocol, which

is a general problem affecting health care worldwide. One potential means of addressing this problem could involve an international conference sponsored by the World Health Organization attended by representatives of various medical associations, with the aim of drafting best practice guidelines to achieve as high adherence rates as possible amongst patients. Perhaps through such a concerted global effort across medical fields, progress can be made towards improving patient-physician collaboration and overcoming hurdles to treatment success presented by patient compliance challenges.

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