

A review of the factors associated with patient compliance and the taking of prescribed medicines

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SUMMARY. *Patient non-compliance is an ever present and complex issue, the importance of which is likely to increase in successive years as the population ages. Non-compliant behaviour is not only costly in terms of time, money and resources, but can also be detrimental to the doctor-patient relationship. Assessment of the prevalence and nature of non-compliance is difficult, but several determinant factors have been found to be associated with it. The aim of this review is to consider these factors and so increase the doctor's awareness of this problem.*

Introduction

PATIENT non-compliance has been recognized for centuries and was even remarked upon by Hippocrates. In recent years, the increasing awareness of patients' rights, the decline in professional paternalism and the greater emphasis on preventive medicine have ensured that it is now an issue of great importance. This is especially true for those concerned in the social, psychological and medical welfare of patients.

Medicines are prescribed in the belief that they will be beneficial to the patient but this belief may not always be well founded, for example, when arsenic was used to treat syphilis in the past. However, failure to take medication in the prescribed fashion may result in loss of treatment efficacy or overdose related side effects. These can in turn lead to the administration of further medication and the involvement of the patient in unnecessary diagnostic procedures or hospitalization. Patient non-compliance is therefore expensive in terms of time, money and resources and can adversely affect the relationship between the patient and doctor.

Nature of patient compliance

Compliance is defined as the extent to which a patient's behaviour coincides with the medical or health advice given.¹ With regard to prescribed medicines, non-compliant behaviour includes major omissions such as failure to cash a prescription or to take any of the prescribed medicine, while lesser and probably more commonly encountered transgressions include errors in dosing, timing and sequence of administration, and the taking of additional non-prescribed medicines.²

Patients are usually classified as being compliant or non-compliant. In reality compliance occurs at a level somewhere between the two with some advice being adhered to, but not all.³ Furthermore, it is a dynamic process which varies continuously as the patient monitors and assesses his or her compliant behaviour and changes it accordingly. Patients who are compliant in one situation, may not be so in another and stimuli which have a positive influence on one individual may have a negative influence on or be of no consequence to another.⁴

Assessment of the prevalence, nature and extent of non-

compliance is fraught with difficulties. In one series of studies doctors were only able to identify non-compliant patients correctly in 67% of cases, and in another they fared no better than chance.⁵⁻¹² Where compliance has been specifically measured an extremely wide range of between 4% and 93% has been found¹³ with most of the spread being in the 29% to 59% region.¹⁴

Determinant factors in compliant behaviour

Compliant behaviour is dependent upon several interacting variables. Traditionally these have been considered in eight categories.

Demographic factors

The demographic factors influencing compliance have been extensively studied, but conflicting results have been found owing to differences in the methods of assessment used. Only an impression can be obtained of the likely types of non-compliant patient; they include, women¹⁵ (especially mothers of high parity¹⁶), the very young,⁴ adolescents,¹⁵ the elderly,^{1,14,17} non-caucasian races,¹⁸ social classes 4 and 5, low income groups¹⁹ and the unemployed.

Condition or disease

A comparison of the compliance of patients with different diseases is difficult to make. Some investigators have found little or no link, whereas others have found a close association. Areas of therapeutic medicine in which non-compliance has been shown to be a problem include conditions requiring prophylactic treatment,²⁰ mild asymptomatic conditions,²¹ chronic illnesses,²² and conditions where the consequences of terminating treatment are delayed, such as epilepsy and psychiatric conditions, especially schizophrenia. Paradoxically there appears to be no association between severity of disease and compliance; possibly because anxiety and fear associated with more serious diseases may have an inhibitory effect on compliant behaviour.²³

Psychological factors

Patients who possess abnormal personality traits or who are paranoid or hypochondriacal are often non-compliant.¹⁴ Some patients feel guilty about taking medication whereas others see it as a social stigma.²⁴ Fear of becoming dependent on treatment is another reason that is commonly cited to explain non-compliant behaviour.²⁵

Health belief model

Compliance is thought to be determined by the knowledge and attitudes of the patient. These factors have been encompassed in a number of different psychological models; the most well known being Becker's health belief model.¹⁵ This postulates that the likelihood of patients following a health regimen is related to their motivation and incentive to do so. Patients must believe that they are vulnerable or susceptible to the disease or its consequences and that they actually have it. They must also appreciate that the consequences of the disease could have a serious impact on their well being. Finally, patients must believe that by following a particular set of health recommendations

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the threat or severity of the condition will be abolished or at least reduced.

Social factors

Social factors which have been shown to improve compliant behaviour include strong family cohesiveness,¹⁹ availability of local help²⁶ and positive attitudes of others in the community, especially family, friends and associates.³ The widowed, the single and those with language difficulties tend to exhibit poor levels of compliance.²⁷

Doctor-patient relationship

Compliance is related to the quality, duration and frequency of interaction between the patient and doctor.²⁸ The doctor's attitude towards the patient²⁹ and his or her ability to elicit and respect the patient's concerns, provide appropriate information and demonstrate empathy are of the utmost importance.^{15,30} Conversely, short, impersonal consultations where the patient's expectations remain unfulfilled have a detrimental effect on compliance.³¹ In some instances a formal relationship may be more beneficial than a friendly one but in others the converse has been reported.^{6,32} Good communication in the form of comprehensible information³³ is essential. Studies reveal that up to 50% of what the doctor tells the patient is forgotten almost immediately.³⁴ Finally, the doctor's belief in the efficacy of the treatment is of paramount importance.^{35,36}

Treatment regimen

The route of drug administration, the appearance, colour and taste of medication, the tablet size and the dosing regimen all influence compliance.^{6,37,38} There is a significant difference between the compliance levels achieved with twice daily as opposed to three times daily regimens — in one study these levels were found to be 70% and 52%, respectively ($P < 0.05$).³⁹ The duration of treatment is also important with treatment extending beyond five days being particularly affected by poor compliance.^{21,33} As expected the highest levels of compliance are achieved when the drug is administered parenterally.³⁹

Setting

The setting in which medication is prescribed can influence compliance. Attendance at a specialized¹⁴ or private clinic⁴⁰ has been shown to increase compliance. In general, compliance among inpatients is better than that achieved in the day care situation which is in turn higher than compliance among outpatients.⁴¹ A short waiting list and increased frequency of visits have also been shown to exert a positive effect on compliance.⁴²

Compliance in clinical trials

Non-compliance by patients in clinical trials is an area of particular concern to the doctor engaged in research as it renders accurate assessment of a drug's safety and efficacy extremely difficult. Furthermore, clinical trials may yield misleading, invalid or conflicting results because of the compliance levels achieved in each treatment group. Attempts have been made to assess compliance by direct and indirect methods but no method is perfect. Direct methods are concerned with the identification of the drug or its metabolite in the patient's body fluids and particularly in plasma or urine. In some instances a drug marker may be employed, such as phenol red, the level of which is measured in the urine. Indirect methods of assessment of whether the medication has been taken may involve direct questioning, pill counts or weighing cannisters.

Conclusion

Patient non-compliance is an ever present, complex problem which is likely to increase in successive years with the shift

towards a greater proportion of elderly people in the population. Elderly patients are particularly at risk from the dangers of non-compliance as the illnesses and conditions that they suffer from often require multiple and long-term therapy. In addition, poor memory, communication difficulties and deficient manipulative skills, as in rheumatoid arthritis, may complicate the situation.

Doctors and those involved in the health care of patients should be constantly aware of the possibility of non-compliant behaviour and attempt to minimize it where possible. This involves actively eliciting the patient's needs and concerns, providing relevant information in a clear concise manner and where necessary prescribing medication which can be readily accommodated into the patient's lifestyle. Millions of pounds and much time and effort are spent each year in the study of the effects of drugs, yet little attention is paid to whether patients take them as directed. Further research into this problem and its possible solutions could be highly cost effective.

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