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Covert dose reduction is a distinct type of medication non-adherence observed across all care settings in Inflammatory Bowel Disease

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Abstract

Background: Non-adherence by dose omission is common and deleterious to outcomes in Inflammatory Bowel Disease (IBD), but covert dose reduction (CDR) remains unexplored.
Aims: To determine frequency and attitudinal predictors of overall medication non-adherence and of covert dose reduction as separate entities.
Methods: A cross sectional questionnaire was undertaken involving IBD patients in three different geographical regions and care settings. Demographics, medication adherence by dose omission, and rate of patient initiated dose reduction of conventional meds without practitioner knowledge (CDR) were assessed, along with attitudes toward IBD medication.
Results: Of 473 respondents (mean age 50.3 years, 60.2% female) frequency of non-adherence was 21.9%, and CDR 26.9% ($p < 0.001$). By logistic regression, significant independent predictors of non-adherence were dissatisfaction with the patient–doctor relationship ($p < 0.001$), depression ($p = 0.001$), anxiety ($p = 0.047$), and negative views regarding medication efficacy ($p < 0.001$) or safety ($p = 0.017$). Independent predictors of covert dose reduction included regular complementary medicine (CAM) use ($p < 0.001$), experiencing more informative ($p < 0.001$) and comfortable ($p =$

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0.006) consultations with alternative practitioners, disbelieving doctor delivered information ($p = 0.021$) and safety concerns regarding conventional medication ($p < 0.001$). Neither the frequency of non-adherence ($p = 0.569$) nor CDR ($p = 0.914$) differed between cohorts by different treatment settings.

Conclusions: Covert dose reduction of IBD medication is more common than omission of medication doses, predicted by different factors to usual non-adherence, and has not been previously reported in IBD. The strongest predictor of CDR is regular CAM use.

1. Introduction

Consistent medication adherence yields better outcomes in Inflammatory Bowel Disease (IBD). Currently available therapies have an important role not only in maintaining remission,[1] but also in the prevention of colorectal cancer via inflammation reduction and possibly direct antineoplastic pathways.[2,3]

Non-adherence to IBD medication is common, most studies suggesting a frequency of 30–45% of patients,[4] but a wider range is reported. Thus many studies have investigated risk factors for non-adherence, and although results have been inconsistent,[4] some common themes have emerged. Demographic and clinical factors such as younger age,[5] employment status,[5] being unmarried,[6,7] disease duration,[8] pill count[7] and medication type[9] have been associated with non-adherence, and whilst this is useful to identify at-risk patients, these factors are not modifiable.

Studies seeking behavioural reasons for non-adherence divide causes into categories encompassing forgetfulness (nearly 50%) and deliberate medication avoidance.[8] The latter relates to patient belief of necessity and concerns regarding medication effects,[10,8,9] dissatisfaction with or poor recall of information regarding medications,[11] physician patient discordance,[11–14] psychological stress, depression, anxiety,[15–17] and poorer QOL.[17]

Most instruments used to measure medication non-adherence primarily assess dose omission rather than dose reduction. This phenomenon of patient-initiated covert dose reduction (CDR) has not been studied as a separate entity in IBD, although it has been reported amongst patients prescribed antihypertensive medications.[18] Consistent under-dosing of IBD medication by CDR is likely to have as deleterious an effect on disease control as dose omission.[19] Therefore CDR is important to identify as distinct from traditionally defined non-adherence by dose omission, as it may reflect different medication attitudes and require a different intervention.

Additionally, existing data suggest that there is considerable variation in non-adherence rates between centres,[20] which may affect generalizability of results from single centre studies. It is unclear whether such variation arises from cultural, geographic or care structure differences. This study simultaneously assessed the frequency and attitudinal and psychological predictors of non-adherence (using existing instruments) and covert dose reduction of IBD medication, and compared frequencies across three contrasting IBD cohorts in Australia.

2. Methods

2.1. Subject selection and recruitment

IBD patients from three different care settings in two distinct geographical locations in Australia were invited to participate.

The first cohort came from a large metropolitan teaching hospital IBD Service at Flinders Medical Centre (FMC), which offers specialist IBD physician and IBD nurse care. The second cohort consisted of IBD patients in an overlapping area, receiving their care in a metropolitan Private Practice setting by general Gastroenterologists. The third cohort included IBD patients cared for via Royal Darwin Hospital (RDH), a public hospital in a very remote location in Northern Australia. When this study was conducted, IBD care in Darwin was undertaken predominantly by General Practitioners (GPs) and General Surgeons.

Potential subjects were identified from IBD databases/hospital records in each location and mailed a questionnaire. Reminder letters were sent to non-responders after one and three months.

2.2. Questionnaire content

The questionnaire sought demographic details, views regarding conventional IBD medications, Complementary and Alternative Medicine (CAM), quality of life (QOL), and Psychological and Personality traits. Where possible, validated instruments were used as described below.

Standard medication adherence was assessed using the Morisky 4 item Self Report *Measure of Medication Taking Behaviour* (MMAS-4),[21,22] a 4 item "yes" or "no" survey that has been validated in a broad range of diseases.[23] Each of the 4 items is scored 0 or 1, the sum of the 4 responses yielding a total of 0 to 4, whereby high adherence is indicated by a score of 0, medium adherence by 1–2 and low adherence by 3–4.

Currently no validated tests exist to assess CDR. This was therefore assessed in two ways; firstly as a dichotomous variable (yes/no) based on the answer to the question "I take less than prescribed of my IBD medication without telling my doctor". A continuous variable representing CDR tendency was also generated using factor analysis.

Other medication attitude statements were put to subjects, seeking the extent of agreement or disagreement using a Likert scale, and additional free text responses were encouraged.

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