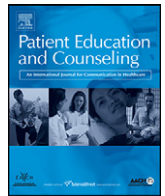




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Adherence

Factors influencing adherence among Irish haemodialysis patients

Lisa Mellon^{a,*}, Daniel Regan^b, Ruth Curtis^b

^a Department of Psychology, Royal College of Surgeons in Ireland, Dublin, Ireland

^b Department of Psychology, National University of Ireland, Galway, Ireland

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ABSTRACT

Objective: Adherence to dietary and fluid restrictions among haemodialysis patients with end stage renal failure (ESRD) is a multi-factorial concept. This study seeks to assess the predictive value of demographic and psychological variables in non-adherence.

Methods: A multi-centre cross sectional design assessed 50 haemodialysis patients on self reported adherence, attitudes towards dietary restrictions, quality of life, depression and anxiety. Adherence to fluid and dietary restrictions was measured objectively using potassium (K), phosphorus (PO₄) and inter-dialytic weight gain (IDWG) parameters.

Results: 62% of patients were non-adherent with at least one aspect of the treatment regime. Regression analysis revealed age as significantly associated with adherence, in particular IDWG, with younger patients displaying poorer adherence.

Conclusion: Younger patients may experience greater difficulty integrating complex treatment demands into their lifestyles, and non-adherence may be a consequence of the severe lifestyle limitations imposed by the haemodialysis treatment regime.

Practice implications: Individualised interventions may be more effective than traditional methods of adherence monitoring in reducing the non-adherent behaviour.

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1. Introduction

Medical management of end stage renal disease (ESRD) differs from the medical management of other chronic diseases due to the lengthy duration of treatment, depth of care required and the sustained intensity of treatment interventions. Aside from transplantation, peritoneal dialysis and haemodialysis are the only renal replacement treatment modalities available to sustain and prolong life of ESRD patients [1]. These therapies are chronically invasive procedures involving several major lifestyle adaptations, and patients must also adhere to rigid treatment programmes. In Ireland, 89% of dialysis patients receive haemodialysis treatment three times weekly for a maximum of four hours per session [2]. Adherence to haemodialysis treatment involves strict fluid restrictions and dietary restrictions for foods containing potassium and phosphorus, in addition to taking medications such as phosphate binders with each meal. Adherence is suggested to be one of the most frustrating aspects of care for patients [3] as it greatly impacts on the patient outside the hospital environment in

addition to the invasive treatment. Non-adherence can result in deleterious consequences such as hyperkalaemia (high levels of potassium), large inter-dialytic weight gain (IDWG) (fluid retention), and hyperphosphatemia (high levels of phosphate) which are associated with an increased risk of hospitalisation and increased mortality risk [4]. This concern becomes more salient given research findings which suggest that as the complexity and duration of a given medical treatment regimen increases, adherence levels to this regimen decrease [5]. Given the complexity of the ESRD regimen it is perhaps not surprising that reported rates of adherence vary greatly, with rates reaching as high as 86% in the USA [6].

Research to date has focused on identifying predictors of adherence for ESRD. Studies have shown that dialysis staff encouragement [7], adherence knowledge levels [8], locus of control [9] and social support [10] are all related to adherent behaviour. However, research has generally failed to demonstrate demographic or psychosocial factors that are consistently associated with non-adherence [11,12]. Some studies have demonstrated clinical and subclinical depression as a significant risk factor for adherence, with reports that non-adherence was twice as likely in depressed ESRD patients as compared to patients without depression [13]. The prevalence of anxiety disorders is not well documented in an ESRD population and therefore the relationship between anxiety and adherence in ESRD is not well established,

* Corresponding author at: Department of Psychology, Division of Population Health Sciences, Royal College of Surgeons in Ireland, Dublin 2, Ireland.
Tel.: +353 1 402 2748.

E-mail address: lisamellon@rcsi.ie (L. Mellon).

but it may be that the chronic stress associated with a rigorous treatment regime [14] may initiate or exacerbate anxiety and depressive symptoms which could ultimately inhibit adherent behaviour.

Age is another potential factor in adherence, whereby older patients have tended to demonstrate better adherence in comparison with the general ESRD population [15–17]. Findings from an early study [18] analysed dietician reports specific to younger patients and reported that those who displayed a high level of understanding about the medical complications that arise from non-adherence actually demonstrated poor levels of adherence to their diet and fluid restrictions when biochemical indices were assessed. This suggests that younger patients may be non-adherent due to the perceived difficulty in integrating the stringent treatment requirements into their lifestyle.

Adherence assessment in ESRD is a complex process with two major obstacles: firstly, inconsistencies in operational definitions of non-adherent behaviour in haemodialysis; and secondly, variable measurement methods across research studies [19]. No standardised method of adherence evaluation exists in research with haemodialysis patients, and the absence of standardised criteria renders the literature on prevalence and consequences of non-adherence in haemodialysis difficult to interpret. Biochemical markers are utilised as objective indicators of adherence, however, there is no standard acceptable cut-off value for each marker [20] which limits the reliability of these measures in assessing non-adherence. Most studies use a combination of self reported adherence behaviour (subjective adherence) and biochemical adherence assessment (objective adherence) in haemodialysis adherence studies. However, self-reported adherence measures have been found to be inaccurate as patients consistently overestimate their adherence levels, and the correlation between objective and subjective measures varies greatly between studies, suggesting that their combination does not necessarily lead to more accurate adherence measurement.

The main objective of this study was to identify factors determining non-adherence to dietary and fluid restrictions in the treatment regimen of Irish haemodialysis patients. It was hypothesised that demographic and psychological variables such as age, depression and anxiety may be associated with non-adherence. A secondary objective was to examine the relationship between self-reported and objectively measured levels of adherence.

2. Method

2.1. Design and sample

A total of 50 individuals participated in this study. All were haemodialysis patients in attendance at one of three haemodialysis units in the west and south-east of Ireland, two hospital based haemodialysis units and one independent facility. The sample was comprised of 30 males and 20 females, and the mean age was 57 years ($SD = 15.91$). Participation was voluntary and patients were informed of the confidential nature of the study. Ethical approval for the study was obtained by the Research Ethics Committee at each hospital site. Prior to study enrolment, patients received information leaflets detailing the study. Informed consent was then obtained by the researcher or was returned by post from the patient to the researcher.

2.2. Study inclusion and exclusion criteria

Patients were invited for study participation if the following inclusion criteria were satisfied: willingness to participate; established on haemodialysis treatment (i.e. ≥ 90 days after first ever haemodialysis treatment); no severe cognitive disorder; no

hearing impairment; English as a first language; aged 18 years or over. Patients were excluded from the study if deemed acutely unwell by the medical team at the time of the study or if they had a diagnosis of dementia.

2.3. Measures

A study questionnaire was administered either by face-to-face interview with the researcher whilst receiving haemodialysis treatment or was self completed and returned to the researcher directly upon cessation of haemodialysis, or returned by post depending on patient preference. The following measures comprised the study questionnaire:

2.3.1. Demographic and clinical details

Age, gender, employment status, transplant history, comorbidities, length of time on dialysis, transplant waiting list status and experience with other forms of dialysis were all recorded.

2.3.2. Psychosocial measures

Hospital Anxiety and Depression Scale [21]. The HADS is a widely used tool for initial assessment of depression and/or anxiety disorder, and is commonly used with chronic illness groups [22,23]. The HADS consists of 14 items (7 items measuring depression and 7 items measuring anxiety) each rated from 0 to 3 along a 4-point Likert scale according to severity of difficulty experienced (e.g. 'I feel cheerful' and 'I get a sudden feeling of panic', respectively). Each subscale total score can range from 0 to 21, 0 indicating no depression, no anxiety, and 21 indicating maximal depression/anxiety. A review of the HADS reports good validity across chronic illness groups, with Cronbach's alpha for HADS-A varying from .68 to .93 and for HADS-D from .67 to .90 [24].

Short Form 12-Item Survey (SF-12) [25]. The SF-12 is a shortened, valid version of the SF-36 Health Survey and assesses functional status, well being and health status perception across eight domains; physical functioning, role functioning physical, bodily pain, general health, vitality, social functioning, role functioning emotional and mental health. A physical component summary (PCS) and mental component summary (MCS) are calculated from the scores in the eight domains by using standard algorithms. The final PCS and MCS scores can range from 1 to 100, whereby a zero score indicates the lowest level of health and 100 indicates the highest level of health. PCS and MCS scores are compared to norm-based scores on the SF-12 ($Mean = 50, SD = 10$) from the general population of the USA (37). The SF-12 is a generic measure and does not target a specific age or disease group, and has been utilised with renal populations [26,27]. Cronbach's Alpha for the SF-12 is consistently above the recommended level of .70 [28,29].

2.3.3. Adherence measures

Self reported adherence: Renal adherence attitudes questionnaire (RAAQ) [30]. This 26-item scale measures patients' attitudes towards their dietary restrictions, e.g. "My diet fits easily into my present lifestyle", using a 5-point Likert scale, whereby higher scores reflect more positive attitudes towards dietary restrictions. The scale contains four subscales; attitudes towards social restrictions, attitudes towards well-being, attitudes towards self-care/support and acceptance. The RAAQ has been previously standardised using an Irish haemodialysis population and demonstrates acceptable psychometric properties with internal consistencies ranging from .68 to .88 [30].

Renal adherence behaviour questionnaire (RABQ) [30]. This 25-item scale measures patients' self-reported level of adherence to

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