Non-adherence to dietary prescriptions in chronic kidney disease

Chronic kidney disease (CKD) is a common disorder affecting more than 50 million people worldwide,[1] with approximately 430 000 people reported as suffering from end-stage renal disease in South Africa in 2003.[2] Of equal concern is the reported increase in the prevalence of CKD from 14.5% (1988–1994 NHANES data) to 16.8% (1999–2004 NHANES data) in the United States in people 20 years of age and older.[3] This increase is also likely to be true for other countries and might be related to the increase in the prevalence of obesity, which has recently been identified as an independent and major risk factor for CKD.[4] The effect of obesity is thought to be related to its link with diabetes and hypertension, both known risk factors for CKD.

The deterioration of kidney function requires considerable dietary adaptations to reduce the risk for increased morbidity and mortality, including changes in the intake of energy, macronutrients, certain minerals and fluid. Haemodialysis has transformed the prognosis of patients with end-stage kidney disease, but its effectiveness is unfortunately often compromised by non-adherence to dietary restrictions and medication.

In dialysis patients the prevalence of non-adherence to fluid restrictions varies between 30 to 74% (self-reported) and 10 to 60% (based on inappropriate interdialytic weight gain).[5] In the case of potassium and phosphorous intake, dietary non-adherence is estimated at 2 to 39% and 19 to 57% respectively. Non-adherence to medication ranges between 19 and 99%, whereas appointment non-adherence varies between 0 and 35%. Reasons for the large variation in reported non-adherence figures may include inconsistencies in the definition of non-adherence, invalid measurement methods and external factors that are unrelated to diet. Other reports suggested that non-adherence is most common for fluid restrictions and somewhat less common for other dietary restrictions and medication.[6] Known complications arising from non-adherence to dietary prescriptions may include the development of renal osteodystrophy, metastatic calcifications and premature death (phosphate and binder non-adherence); cardiac arrhythmia (potassium non-adherence); fluid overload with pulmonary oedema, left ventricular hypertrophy and heart failure (fluid and sodium non-adherence); and protein-energy malnutrition, which has been shown to be an important risk factor for increased morbidity and mortality in end-stage renal disease. These adverse consequences can be prevented or delayed by preventive measures, early detection, and adherence to treatment guidelines.

Several research reports concluded that there is little or no evidence supporting an association between patient characteristics and adherence to treatment guidelines in chronic disease.[6,7] It is possible, however, that different diseases and medical interventions may have different effects on adherence. Indeed, there are many factors that may contribute to non-adherence in patients with CKD, in addition to personal characteristics. Such factors may include the presence of anorexia due to uraemia, gastroparesis, especially in diabetics, intraperitoneal instillation of dialysate in peritoneal dialysis, increased serum levels of leptin, concurrent illness and hospitalisation, as well as increased pro-inflammatory cytokines.

Various theoretical approaches have been used to achieve or explain dietary adherence, with varying and often disappointing results. The Health Belief Model explains adherence to health prescriptions by patients' perceptions of the severity of the condition, the benefits and costs of treatment and barriers to treatment. Although the usefulness of this model has been confirmed by some studies, others have shown that patients often hold beliefs that are greatly at variance with medical knowledge and/or psychological theory.[8]

The Transtheoretical Model explains behaviour change as a process that focuses on the individual's decision to change. It is thought that a person progresses through five stages of decision making to bring about a change in behaviour. These stages include precontemplation, contemplation, preparation, action and maintenance. Relapse or regression to an earlier stage appears to be common for most health behaviour disorders.[9]

The Interactionalist Perspective Model emerged in the 1970s as an alternative to the personal and situational influences on behaviour.[10] According to this perspective, the identification of personality traits or dispositions that predict behaviour without also considering the situation an individual is facing is of limited value. It has been argued that it is the interactive effect of personal and situational factors that determines behaviour.

The Patient-by-Context Interactive Perspective Model was proposed by other authors who reported that treatment adherence of dialysis patients is improved when the patient's preferred style of coping with illness and treatment-related experiences is congruent with the features or demands of the medical intervention the patient is undergoing.[6] They found that in patients with end-stage kidney disease, a more vigilant style of coping was associated with improved adherence only for patients undergoing home-based dialysis treatment that is highly patient-directed. Among patients receiving hospital-based care, a more passive coping style was associated with better adherence.

The Social Learning Theory (self-efficacy) has been shown to affect health outcomes positively and to improve compliance in renal patients. According to this theory, self-efficacy is mediated by a person's beliefs about his/her capacity to demonstrate certain behaviours. Results indicated that dietary self-efficacy determined both behaviours and blood biochemistry outcomes. Patients with greater dietary self-efficacy had lower serum potassium and weight gain, showed favourable compliance attitudes and behaviours toward prescribed regimens and fostered better relationships with staff.[11]

According to the Theory of Planned Behaviour, there is an association between the likelihood of an individual to engage in specific health behaviour and his/her intention to engage in such behaviour. The theory has been reported to explain approximately 40% of the variance in health behaviour. The theory also postulates that perceived behavioural control can have a direct effect on behaviour without the mediating effect of attitudes towards the behaviour.[12] In this issue of the SAJCN, Fincham and co-workers report, for the first time in an African setting, on the usefulness of the Theory of Planned Behaviour in predicting dietary and fluid adherence among a sample of 52 disadvantaged haemodialysis patients attending public sector hospitals in the Western Cape of South Africa. They found that the model could not identify any significant predictors of predialytic serum potassium and predialytic serum phosphate levels. The authors conclude that the Theory of Planned Behaviour may not function in the same manner as it does in Western population groups. Although the reported findings need to be confirmed in a larger number of subjects, the findings highlight the caution necessary in extrapolating developed world experience in developing world settings.

The available evidence indicates that despite many attempts using theoretical approaches to explain the behaviour of patients, non-adherence to dietary prescriptions remains a common problem in patients with CKD. We are therefore still unable to fully explain the determinants of dietary behaviour, and further research is needed in order to improve our understanding of the factors that predict adherence to dietary prescriptions, which is associated with an improvement in the quality of life and survival of patients with CKD.

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