

## Brief Clinical Reports

# PSYCHOLOGICAL FACTORS INFLUENCING THIRST AND DRINKING IN HAEMODIALYSIS PATIENTS ON A FLUID RESTRICTION

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**Abstract.** Models of panic and health anxiety are used to explore the possible psychological processes contributing to excessive fluid intake in kidney patients on a fluid restriction. Some simple figures concerning the role of attention in thirst intensity are presented.

*Keywords:* Perception of thirst, fluid intake, haemodialysis, fluid restriction, distraction.

### Introduction

Haemodialysis is a treatment for patients with irreversible kidney failure. It involves being connected to a machine three times a week for between 3 and 4 hours, in order for toxins and excess amounts of fluid to be removed from the blood stream, essential functions normally performed by healthy kidneys. Because the kidneys no longer work to produce urine, any fluid ingested by the patient, either as a drink or as the water content of food, can only be removed during dialysis. Because of this inability to excrete excess fluid, normally patients on haemodialysis are asked to restrict their fluid intake to 500 ml daily. Drinking more than the advised limit results in overloading of the cardiovascular system and is associated with acute breathing difficulties in the short term and heart failure in the long term. Both of these conditions are life threatening and potentially avoidable, but drinking considerably more than the advised fluid limit is a familiar experience to many patients.

The subjective experience of thirst and drinking in the haemodialysis population is insufficiently understood. Whilst a high dietary sodium intake leads to excessive thirst and may account for fluid overloading in some, self efficacy seems to be emerging as an important and recurrent theme (Zrinyi et al., 2003; Christensen, Moran, Wiebe, Ehlers, & Lawton, 2002; Brady, Tucker, Alfino, Tarrant, & Finlayson, 1997). However, anecdotal evidence suggests that

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there may also be other potentially modifiable psychological factors that influence drinking in this patient group.

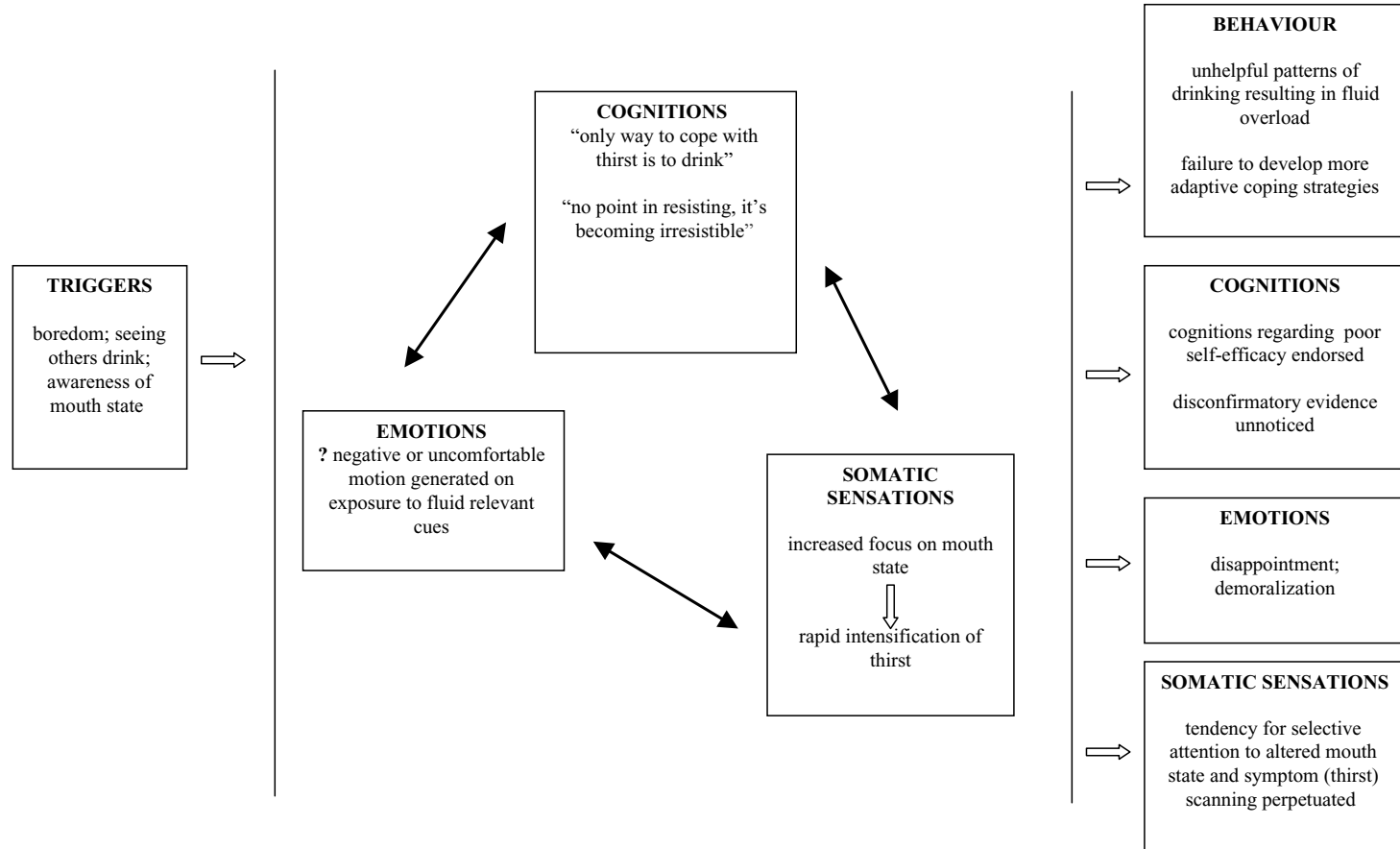
This paper conceptualizes thirst as an unpleasant somatic symptom in the context of a necessarily restricted fluid intake. A suggested model of the psychological factors influencing the perception of thirst and consequent drinking is derived from a synthesis of the cognitive models of Panic (Clark, 1996) and Health Anxiety (Salkovskis, 1996) and draws on the work on motivational priming (Lang, 1995) and self-efficacy (Bandura, 1977). Some simple figures demonstrating the effect of attention on thirst intensity in this clinical population are then presented.

### **A model of the psychological factors influencing thirst and drinking**

In both the cognitive models of Panic and of Health Anxiety a combination of attentional bias and misinterpretation of physical sensations are regarded as key in onset and maintenance. Clark's model is distinct from Salkovskis' in that catastrophe is thought to be imminent and anxious arousal is acute. Salkovskis' model is more reliant upon a background sense of unease and anxiety in relation to poor health outcomes at some future time point.

An important starting point for the development of this new model is the observation that tension between the need to be compliant (for health reasons), and the desire to drink normally, appears to create an uncomfortable state of ambivalence regarding drinking for many of this patient group. Furthermore, the generation of deprivation-specific negative affect has been demonstrated in food restricted individuals in response to food cues (Drobes et al., 2001), and this finding may be equally applicable to those who are fluid restricted. Many patients report that the need to adhere to a strict fluid limit in addition to all of the other demands of living with a life-limiting chronic illness is experienced as a stigmatizing and often intensely unpleasant experience.

Anecdotal evidence also suggests that this knowledge of the need to control fluid intake combined with a sense of unease about how to manage the fluid restriction results in some degree of selective attention to an unpleasant somatic symptom (thirst). Research into pain has shown that attention to pain increases the experience of pain (Melzack & Wall, 1988) and it seems likely that the same would apply to thirst. The process of symptom intensification resulting from increased focus may help to account for the finding that a sample of patients with a persistently high fluid intake appeared to have a decreased thirst threshold, thought to be unattributable to physiological factors in comparison to normal subjects and other more fluid restriction adherent patients (Martinez-Vea, Garcia, Gaya, Rivera, & Oliver, 1992). It is also known that haemodialysis patients who are very symptom vigilant are more likely to be non-adherent to their fluid restriction (Christensen, Moran, Lawton, Stallman, & Voights, 1997). In the context of the model presented here, it would appear that the most salient symptoms are thirst and unpleasant changes in mouth state (dryness and taste) due to the uraemia that is secondary to renal failure and not entirely eliminated by the dialysis process. Thus, one possible interpretation of this finding that is both consistent with the proposed model and the experience of marked thirst reported by some patients is that symptom vigilance becomes strongly focused on thirst and mouth state. When patients encounter triggers such as seeing others drink they begin to monitor both their mouth state and degree of thirst. As a direct consequence, thirst intensifies and any disconfirmatory evidence goes unnoticed, e.g. the fact that no thirst was present prior to exposure to the triggering stimuli. The patient's experience



**Figure 1.** Model of psychological processes involved in an increased perception of thirst and unhelpful drinking patterns in haemodialysis patients on a fluid restriction

of this is likely to be a rapid and uncontrollable increase in thirst and, as a result, in the absence of any other coping strategies, they may feel powerless to resist the urge to drink.

Furthermore, there is likely to be both an interaction of negative emotion and intensification of and preoccupation with the symptom as well as unhelpful cognitions regarding the nature of thirst, the futility of resisting drinking, and the patient's own inability to manage thirst and drinking in a desirable way. These three factors, it is hypothesized, continue to interact and contribute to an escalation in the situation that culminates in the patient drinking. Once drinking begins it may be difficult to control or conclude. As a result, the opportunity for more adaptive coping strategies to be developed is missed and the patient's cognitions regarding poor self-efficacy and the irresistible and uncontrollable nature of thirst are validated. Each time thirst emerges it is quickly reinforced by drinking, even when the patient is becoming fluid overloaded and, as a result, other accompanying and contributing physiological, affective, cognitive and behavioural responses become ingrained. The frequency with which some patients fluid overload means that this pattern becomes established quickly and securely and is, as a result, difficult to reverse.

### The role of attention in thirst intensity

Seven haemodialysis patients took part. Four of the patients were enrolled in a small LREC approved study involving the use of cognitive behaviour therapy to improve fluid overload and two patients were volunteers who had spoken to study patients and expressed an interest in ongoing work in enhancing fluid management. The research patients rated thirst intensity during a treatment session at the dialysis unit when distraction consisted of the interaction within the session. The two volunteers rated thirst intensity whilst being dialysed and distraction consisted of playing a computerized card game on a laptop PC. All seven patients were from the same satellite dialysis unit and answered "yes" to the question "are you thirsty now?" before the distracting activity. After either completion of the treatment session (up to 30 minutes) in the case of the study patients, or after the card game (up to 10 minutes) in the case of the volunteers, each patient was asked to make a rating of their thirst level using a

**Table 1.** Thirst intensity and the role of attention: visual analogue scores and shift in thirst focus and distraction activities. (0 cm = no thirst/not at all thirsty, 5 cm = extreme/severe thirst)

	Thirst focus	Thirst distraction (retrospective rating)	mm shift between conditions
Patient 1	46 unit of measurement removed	4	42
Patient 2	36	19	17
Patient 3	20	15	5
Patient 4	40	11	29
Patient 5*	20*	30*	10*
Patient 6	36	15	21
Patient 7	38	7	31

\* Patient reported thirst increased whilst being distracted, but also stated that she misunderstood instructions. Exercise not repeated.

Visual Analogue Scale (VAS). They were also asked to make a retrospective rating of thirst whilst in the middle of the distracting activity on a second VAS. Both visual analogue scales were anchored by “no thirst/not at all thirsty” at one end (0 cm) and “extreme/severe thirst” (5 cm) at the other. All patients were interested in their results and keen to discuss the experience of the fluid restriction. The results demonstrate a reduction in thirst intensity when patients are occupied by an absorbing activity and are presented below.

The limitations of this simple distraction exercise (i.e. a small group of patients and the use of different distracting activities and time periods over which they were engaged in the activities and retrospective thirst ratings) are fully acknowledged. Nonetheless, the preliminary insights provided by these experiences with patients may have important clinical relevance and deserve further examination.

### Conclusion

A model of the possible psychological factors involved in fluid overload derived from an existing knowledge base provides a credible and compassionate framework for understanding some of the problems encountered with this particular component of treatment concordance in this clinical population. The problem of fluid overload is likely to be multi-factorial and it is hoped that consideration of the psychological influences involved in fluid management will complement existing knowledge regarding the physiological determinants of thirst and drinking. More importantly, however, it is hoped that further understanding of the patient's experience will translate into effective cognitive and behavioural interventions to enhance fluid management.

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