



Review

# Educational interventions in peritoneal dialysis: A narrative review of the literature



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## ABSTRACT

**Objectives:** To review the current literature on educational interventions used in peritoneal dialysis (PD). Educational interventions have become increasingly relevant because they play a key role in helping individuals to actively participate in their therapy and to manage their chronic condition. The paper will focus on two areas: (a) educational interventions for individuals living with PD and (b) educational interventions for PD nurses.

**Design:** A narrative review of primary research.

**Data sources:** Electronic searches of the MEDLINE, CINAHL, EMBASE, ERIC and Cochrane Library (2006–2013) databases were undertaken using terms such as peritoneal dialysis, insertive training, curriculum, nursing education, train the trainer, coach the coach, tutor the tutor, and patient education were used. All studies were reviewed by two researchers.

**Review methods:** Titles and abstracts of 555 studies were screened and read. Full text articles retrieved were further screened against the inclusion and exclusion criteria. Relevant data on the educational interventions for people receiving PD and nurse training programs were extracted and synthesized narratively.

**Results:** Eighteen articles met the inclusion criteria. Most of them focused on educational intervention programs for people undergoing PD. Findings on the link between the PD trainer's background and peritonitis rates among individuals undergoing PD are inconsistent. PD learners should be taught self-management skills as well as technical skills. They might also benefit from receiving decision-making aids. Older people, people with co-morbidities and people with low educational status need more time to acquire self-care skills and are more likely to develop peritonitis. Home visits have the potential to improve learning outcomes. Re-training needs should be assessed and fulfilled as appropriate. Case and disease management programs have been shown to have positive outcomes for individuals receiving PD.

**Conclusions:** Educational interventions for PD remain an under-researched area, despite the potential they have to make this type of therapy more successful. Further research on education and training for people receiving PD and for PD nurses is needed. In the meantime, educational interventions used for other chronic conditions could provide guidance.

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## What is already known about the topic?

- For chronic kidney disease, the majority of literature focuses on hemodialysis.
- PD education is a multifaceted field, partly because of the uniqueness of PD therapy and partly because of the general issues involved in managing a chronic condition.
- Nurses provide PD education to patients and staff, but not all of them have a background in teaching.

## What this paper adds

- PD trainers should assess patients to establish where obstacles to the learning process may lie, foster their self-management skills, provide pictorial and decision-making aids, and assess their re-training needs.
- Home visits, and disease and case management should be the focus of further research as they seem to be beneficial for PD patients.
- PD trainers need to take account of the specific situation in which PD patients find themselves: e.g. their dependency on therapy for survival, their psychological issues and their potential to suffer from cognitive impairments.

## 1. Background

Over the past few decades, chronic diseases have presented a major challenge to healthcare systems worldwide. Chronic diseases are the leading cause of death in the world, accounting for 63% of all deaths (WHO, 2011). Chronic kidney disease (CKD), in which people progressively lose kidney function, is becoming a serious public health problem. The current estimated prevalence of CKD is between 8% and 16% (Jha et al., 2013). End-stage kidney disease (ESKD), which describes the fifth stage of CKD where the kidneys permanently cease to function, is expected to become more widespread. This is because of the rising prevalence of diabetes mellitus, cardiovascular disease and obesity, and because of the aging global population (Kaptein et al., 2010). The prevalence of diabetes mellitus is predicted to reach 4.4% globally by 2030, while hypertension is likely to affect 29% of the adult population by the same year (Wild et al., 2004; Kearney et al., 2005).

ESKD is currently treated by kidney transplants and kidney dialysis. As the number of transplant organs available is limited, renal replacement therapy is the only option for many people with ESKD. In hemodialysis (HD), an external artificial kidney machine is used to filter the blood across a semi-permeable membrane (dialyser). The treatment lasts for 3–4 h a day, and is performed three days a week, mostly in hospitals and clinics. During peritoneal dialysis (PD), a physiological solution (dialysate) is instilled through the PD catheter into the peritoneal cavity. Uremic toxins and solutes diffuse across the membrane from the blood stream into the dialysis fluid. Fluid removal takes place by osmosis. Hydrostatic pressure causes fluid to move across the semi-permeable membrane in a process known as ultrafiltration (Thomas, 2013).

For individuals undergoing PD, the therapy can offer independence, self-efficacy and a sense of control. However, it can also have a negative impact on physical functioning and self-esteem if social support is lacking (Tong et al., 2013). Compared to people on HD, those receiving PD usually have to take a more active role in their therapy, as they manage up to 90% of their care themselves (Hall et al., 2004). Thus, PD is a good example of a situation where people can be taught to cope with and manage their chronic condition themselves.

Educational interventions play a key role in helping individuals succeed at being actively involved in their therapy, and at providing their own care. Not only does this have the potential to lift the economic burden somewhat (Baboolal et al., 2008), it also benefits the individual because home-based therapies offer a greater degree of flexibility (Curtin et al., 2004). With more and more people managing to live with their chronic conditions for many years, educational interventions for these kinds of diseases have become increasingly relevant.

A vast array of educational interventions exist for different chronic conditions. A Cochrane review from 2008 (Coster and Norman, 2009) identified 30 reviews of educational and self-management interventions that concerned nursing practice. More recent reviews show that a wide range of educational interventions exist for chronic conditions such as lower back pain (Engers et al., 2008), type 2 diabetes (Duke et al., 2009) and coronary heart disease (Brown et al., 2011), to name just a few. However, not enough evidence exists on the effectiveness of these interventions, and more research needs to be done to find out what makes educational interventions for chronic conditions successful (Coster and Norman, 2009). Educational interventions for CKD mainly concern dialysis care. These interventions aim to improve diet and/or fluid concordance and involve short-term or medium-term follow-ups. The quality of the studies is considered suboptimal (Mason et al., 2008).

People with ESKD face some of the same problems as exist in the chronic conditions mentioned above. They show signs of impaired quality of life (Perlman et al., 2005), and the prevalence of depression and anxiety is high (Cukor et al., 2007). Little is known about how people with ESKD learn and how they remember the information they receive (Niccum and Perez, 2000). Participants in educational interventions reviewed systematically by Mason et al. (2008) were mostly receiving HD. This is most likely because HD is the predominant form of dialysis. However, educational programs designed for HD cannot be transferred to PD without being modified. Individuals receiving PD face specific educational challenges, and these need to be addressed by any intervention used in this context. Since PD is a home-based, self-care treatment, people receiving it need to have a high degree of independence. But managing the condition and the PD therapy is a multifaceted task with numerous aspects that need to be addressed (Finkelstein et al., 2011). Individuals have to perform PD, manage exit-site care, take the prescribed medication, conduct self-assessments (such as monitoring vital signs and checking for complications) and follow diet and fluid restrictions (Ronco and Cruz, 2009). In addition to

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