

TEACHING PERITONEAL DIALYSIS IN AUSTRALIA:

AN OPPORTUNITY FOR IMPROVEMENT

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ABSTRACT

Introduction: Up to a 10-fold difference in clinical outcomes between Australian peritoneal dialysis (PD) units exists. There is an international focus on the harmonisation of educational practices in PD to determine whether this may lead to improved patient outcomes.

Aims: Evaluate the current teaching practices of nurses and patients in Australian PD units.

Methods: An online survey with questions on nurse and patient training was made available to PD units in Australia.

Results: Thirty-eight (70%) of 54 PD units in Australia completed the survey. A written standardised curricula was utilised in 21 units (55%) for nursing staff and 30 units (86%) for patients, with 22% and 12% including an electronic delivery component for each group respectively. Universal teaching of adult learning principles was not demonstrated. The hours spent on teaching nursing staff ranged from <15 hours in 24% to >100 hours in 21% of units. The average number of hours spent by nurses each day to train patients ranged from <2 hours in 14% to >6 hours in 11% of units, with the average total training days ranging from 2-3 days in 14% to over 7 days in 14% of units. Staff and patient competency assessments were performed routinely in 37% and 74% of units respectively.

Conclusions: Considerable differences exist amongst Australian PD units in the education of staff and patients. There is a general lack of delivery and competency assessment to meet educational standards. It remains to be seen if harmonisation of educational curricula can translate to improved clinical outcomes.

INTRODUCTION

End-stage kidney disease (ESKD) is a growing problem in Australia and around the world, resulting in considerable cost¹. Peritoneal dialysis (PD) is the preferred dialysis modality as it is the most cost-effective approach to deliver dialysis, has improved patient quality of life, provides better preservation of residual renal function and confers equivalent or better survival than haemodialysis². However, despite a desire to increase its uptake, Australia has noted a declining proportion of ESKD patients on PD^{1,3-5}.

Over 1,000 patients commence PD every year in Australia, however a similar number stop PD⁶. The most common reasons for technique failure in PD patients (excluding patient death) are peritonitis, inadequate dialysis, and mechanical malfunction⁷. There exists up to a 10-fold difference in peritonitis rates between different units in Australia but the explanation for these differences is unclear⁶.

The International Society for Peritoneal Dialysis (ISPD) has recommended the standardisation of teaching practices for PD for both nursing staff (Trainers) and patients^{8,9}.

The Nursing liaison committee of the ISPD performed a survey of 14 PD courses for patients and caregivers from 10 countries and identified significant differences and gaps in the educational content⁹. It was concluded that there was a need to create a syllabus to ensure key learning outcomes are met in all courses, and one has been produced, though it has not been tested in the context of a clinical trial⁹.

It is conceivable that part of the current differences in clinical outcomes between PD units may be related to differences in the training that is delivered between the units¹⁰⁻¹². This includes the training of patients and also their trainers. A comprehensive review of PD

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training practices in Australia has never been conducted. Therefore, the aim of our study was to assess the current practices of training nurses to become PD trainers, and the training of the patients to evaluate the current status of training.

METHODS

This was a cross-sectional study that utilised an online survey that was made available to all PD units in Australia. The study was developed and coordinated by the Australasian Kidney Trials Network (AKTN) and the HOME Network (HN). The AKTN designs, conducts and supports clinical trials and fosters clinical trials expertise in Australia and New Zealand in conjunction with global collaborators. The HN was established in 2010, as an Australian initiative to bring together healthcare professionals in the field of home dialysis with the aims of identifying and addressing the barriers to optimal utilisation of home dialysis in Australia¹³.

Survey

The survey included both fixed-response and open-ended questions. Thirty-eight questions were grouped to describe training of nursing staff (11 questions), training of PD patients (18 questions), individual PD Unit characteristics (5 questions) and patient follow up (4 questions). The survey was designed to address some of the ISPD recommendations regarding the preferred curriculum⁹. The survey was delivered online via Survey Monkey after an initial pilot by the research team. It took approximately 25 minutes to complete the survey.

A single nominated senior PD nurse in each PD unit in Australia was contacted by phone by one member of the research team before being emailed a link to the online survey. The senior

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nurse was identified by the HN, who maintain a database of senior staff in all PD units in Australia. While the PD unit completing the survey was not identifiable, the senior nurse was asked to email the study coordinating centre to confirm completion of the survey. If a PD unit did not confirm survey completion, a reminder email was sent to the nominated nurse with a follow-up phone call if the survey was still not completed within 3 months. All survey responses were compiled by the AKTN and presented in a descriptive or qualitative nature. Not all of the surveys had all of the questions completed; results are reported with the denominator and numerator of respondents to allow correct interpretation.

RESULTS

Thirty-eight out of 54 PD units (70%) completed the survey with 30 out of 35 respondents (86%) identifying themselves as registered nurses, and 25 out of 35 (71%) indicating that they were nurses certified with a postgraduate renal certificate.

Training of PD nursing staff (Training the Trainer)

Twenty-one out of 38 units (55%) reported that they did not have a written curriculum for the training of PD nursing staff. Of the 17 units reporting a written curriculum, 65% had a designated nurse to deliver the educational content to staff; 85% of these were reported to have clearly defined outcomes; and the majority of units delivered their curriculum by direct demonstration (59%) or paper-based (30%) methods. There was an electronic component of curriculum delivery in 23% of units with an interactive electronic component in only 10% of units.

Amongst the 11 units with a written training curriculum and a designated nurse to deliver the educational content, adult learning principles, styles and potential barriers to learning were

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reported in 82%. In addition, of those units with an existing training curriculum, 7 out of 11 (64%) described that there was direct teaching of the understanding of adult learning principles. Strategies to recognise and manage the impact of cultural influence on PD patient training were taught in 4 out of 11 (36%) respondents.

There was a wide range of hours spent training a PD nurse prior to being deemed a competent trainer. Fifty percent of units reported less than 39 hours and 21% required over 100 hours of training (Figure 1). A competency assessment using a formal checklist or written assessment occurred in only 37% of units following initial training, and a periodic reassessment of competency in 29% of units. Competency assessment was conducted via peer review in 88% (23 out of 26) of units, and paper-based in 65% (17 out of 26).

Training of patients

Thirty (86%) of the 35 units reported having a written curriculum for training of PD patients. Only 9% (3 out of 35) reported utilisation of an interactive electronic platform for the delivery of the curriculum to patients. The average number of hours of training per day was 4 to 6 hours in 57% (20 out of 35) of units and the average number of days was 4 to 5 days in 54% (19 out of 35) of units (Figures 2 & 3).

The majority of units did not use a validated assessment tool to determine a patient's suitability for PD prior to dialysis commencement. Before beginning PD training, a patient's learning style was reported to be assessed as visual (49%: 17 out of 35 units), auditory (49% of units) and/or kinaesthetic (46% of units) in only some PD units.

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It was reported that competency assessments on patients occur in 74% (26 out of 35) of units at the end of the initial training, 63% after an episode of peritonitis, 57% after prolonged hospitalisation, 60% after a prolonged period of time off PD, and periodically in 31%. The delivery of the competency assessment occurs as a peer assessment in 76% of units and paper-based assessment in 34%. Less than 3% of assessments are electronic.

Retraining of patients was not universal, with 60% (21 out of 35) occurring after an episode of peritonitis, 54% after prolonged hospitalisation and 74% after a prolonged period of time off PD. Periodic reassessment occurs in 29% of units. In 49% (17 out of 35) of units, PD patients are routinely seen once every 3-6 months, and in 29% once every 1-2 months. Routine home visits to observe a patient perform a PD exchange at home is routinely done on the first day home after training in 97% (33 out of 34) of units; periodically after installation at home in 71% (24 out of 34) of units; and after an episode of peritonitis in 68% of units (23 out of 34).

DISCUSSION

PD outcomes (e.g., peritonitis and technique survival) in Australia are consistently poorer than most other countries¹⁴. Even within Australia, there is up to a 10-fold difference in peritonitis rates between units^{6,15}. Although the reasons for these differences are unclear, this study suggests that wide variation in PD training currently exists, and it is conceivable that this may potentially play a key role in improving PD outcomes^{11,12}.

Observational studies to date have demonstrated an association between non-compliance with PD protocols and poor bag exchange technique with an increased risk of peritonitis^{16,17}. The ISPD has reiterated the need to focus on PD training in published guidelines and suggested

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standardising the educational curriculum^{8,9}. The 'ideal' educational curriculum has not been defined, but a recent set of ISPD Guidelines has suggested a potential syllabus⁹.

Two non-randomised studies have attempted to demonstrate the efficacy of a PD educational curriculum on reducing peritonitis, with one of them showing a statistically significant benefit^{18,19}. However, both studies lacked sufficient methodological rigor to allow adequate confidence in their results. As such, there is currently no evidence-based standardised curriculum for PD training. This deficit has also been identified by the AKTN and the HN as a key priority requiring urgent attention.

A recent Brazilian study on over 2000 patients has demonstrated that there is an association between the characteristics of training PD patients and their outcomes, supporting the suggestion that this may be an important modifiable risk factor²⁰. Patients that received less than 1 hour of training per day and those with a cumulative training of less than 15 hours had significantly higher incidence of peritonitis.

ISPD Guidelines recommend the inclusion of the concepts of adult learning principles in the curriculum for future PD trainers to facilitate the subsequent training of PD patients^{8,9}. Indeed, the two trials to date incorporated these principles within their curriculum, however it has not been shown that this is a required component^{18,19}. The current survey demonstrated that adult learning principles are not widely incorporated in PD units around Australia, with less than 50% of PD units assessing patients' learning styles. Moreover, the findings from the survey suggest that the concept of adult learning principles has not been fully elaborated and understood clearly.

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Actively applying Knowles' "adult learning principles" during trainer-patient interactions should increase engagement and improve communication, both of which are important to learning. Providing training resources in multiple formats (audio, visual and interactive aids) taking into account a range of individual patient preferences caters for a range of learning styles and further enriches a learning environment. However, other more recent education frameworks that characterise patients as "learners" are also of value in PD curriculum development. Good teachers know that the cycle of exchange (e.g., paraphrasing and summarising) between learner and teacher has a satisfying outcome that promotes understanding when learning a new concept or practice. This deliberate iterative exchange between learner and teacher has been described as the "Conversational Framework" (CF) by Laurillard²¹. The CF focusses on the type of learning involved and on optimising that learning process. Effective PD training for both trainers and patients should be in line with best practice by including learning technologies which follow the CF, whether face to face or internet based. A straightforward means of delivering a uniform approach in training is to capture the essence of good trainers in an internet resource built using the CF while also meeting a set of parameters for technology acceptance such as those of Wong²². In fact a course design for trainers where dialogue is built into both the face to face training and the online resource, is more likely to result in those trainers teaching patients according to the CF²³. We propose that this dialogical emphasis in teaching both trainer-learners and patient-learners would significantly improve learning outcomes.

The results of the current study have demonstrated a wide variation in the training of PD nurses and PD patients in Australia. Approximately 50% of PD units in Australia currently have a written curriculum for the training of PD nurses, only 10% including an interactive electronic component, with less than 40% of PD units performing a competency assessment.

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While most PD units utilise a curriculum for patient training, only a minority utilised an interactive electronic component. A self-paced electronic learning module that can be completed anywhere at anytime could possibly increase the effectiveness of patient and/or trainer learning. In addition, while competency assessments of patients were more prevalent, it is still not universally practiced. Published data to date are scant and conflicting with respect to the importance of competency assessment for PD patients at the completion of training^{18,24}. The most effective method of competency assessment is also unclear.

A survey of PD training programs was performed previously and included respondents from the USA, Canada, South America, Hong Kong, and the Netherlands but did not include Australia²⁵. Similar to the results of the present study, they found disparate levels of training of the PD nurse with poor levels of formal education on adult learning principles and great variability in the method of teaching delivery. Similar durations of patient training were noted – 5 hours per day in the international survey versus 4-6 hours per day in over half the units in Australia; and 6 days in the international survey versus 5 days in over half the units in Australia.

A major limitation of this study was that the results were self-reported by PD nurses in each unit (who may also have not been secure in their full anonymity) and therefore may not have truly represented reality due to various response biases, such as social desirability bias and acquiescence bias. Furthermore, only a limited assessment of the incorporation of adult learning principles was undertaken. Finally, assessment of existing curricula for PD nurses and PD patients to ensure that essential learning outcomes align with the appropriate competency checks was not undertaken.

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The present study has demonstrated that considerable variation exists in the education of PD nurses and PD patients between PD units in Australia. Improvements in outcomes may be achieved through integration of modern, evidence-based teaching and learning methods.

However, to fully understand the impact of education of PD staff and patients on clinical outcomes, this needs to be performed within the context of a clinical trial. The AKTN and the HN are exploring the potential for collaborating on an international study in this area.

Accepted Article

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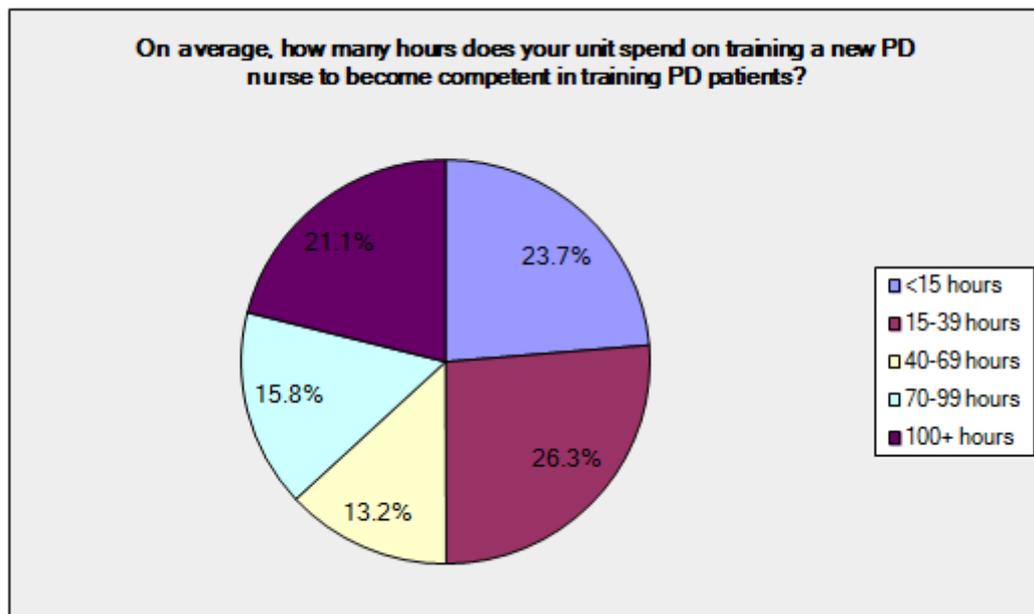


Figure 1. Average number of hours spent on training a new nurse to teach PD.

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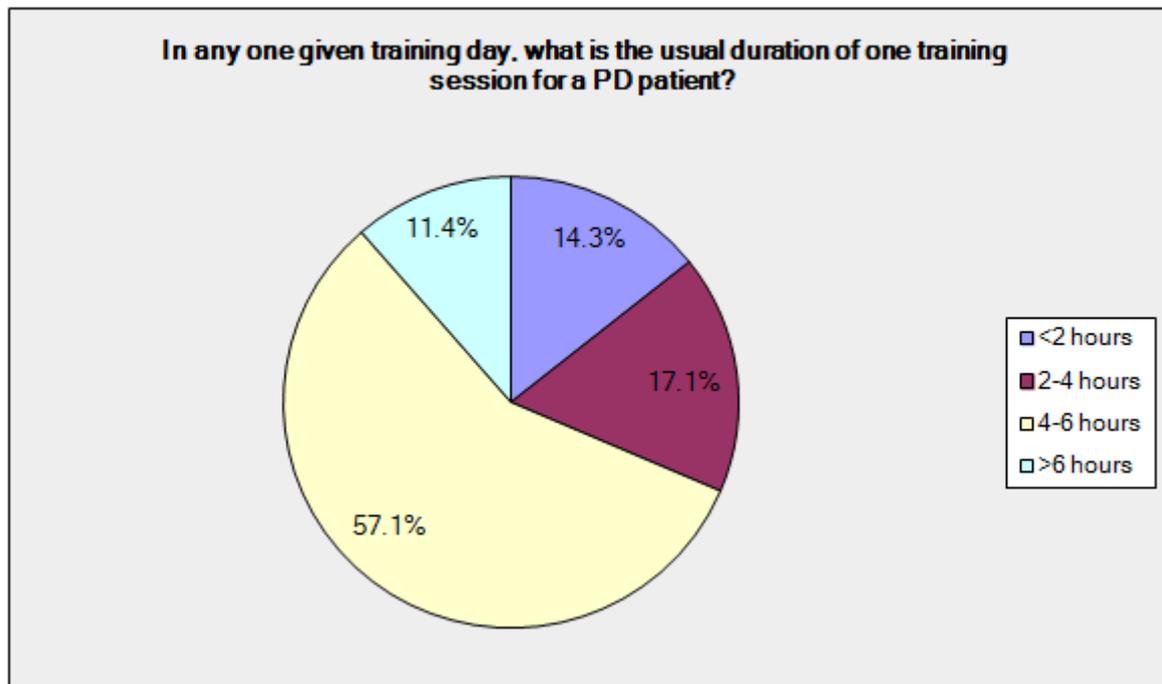


Figure 2. Average number of hours per day spent training a new PD patient.

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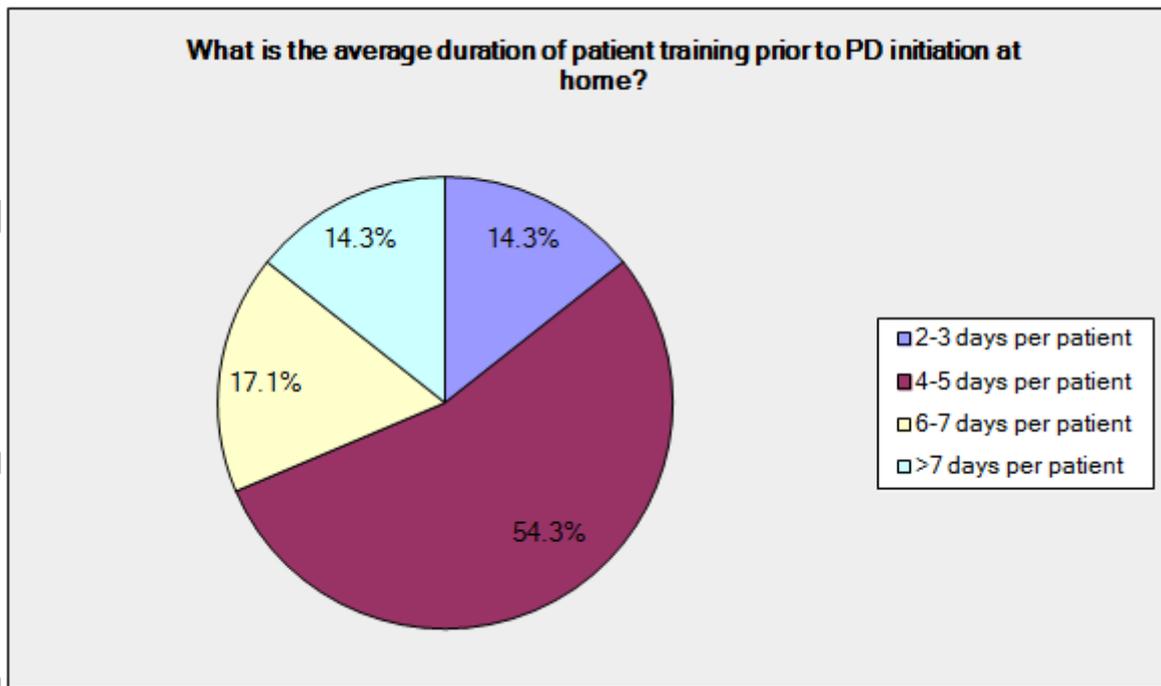


Figure 3. Average number of days spent training a new PD patient.

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